Better Homes and Gardens®

WOOD

THE MAGAZINE FOR HOME WOODWORKERS

$3.50

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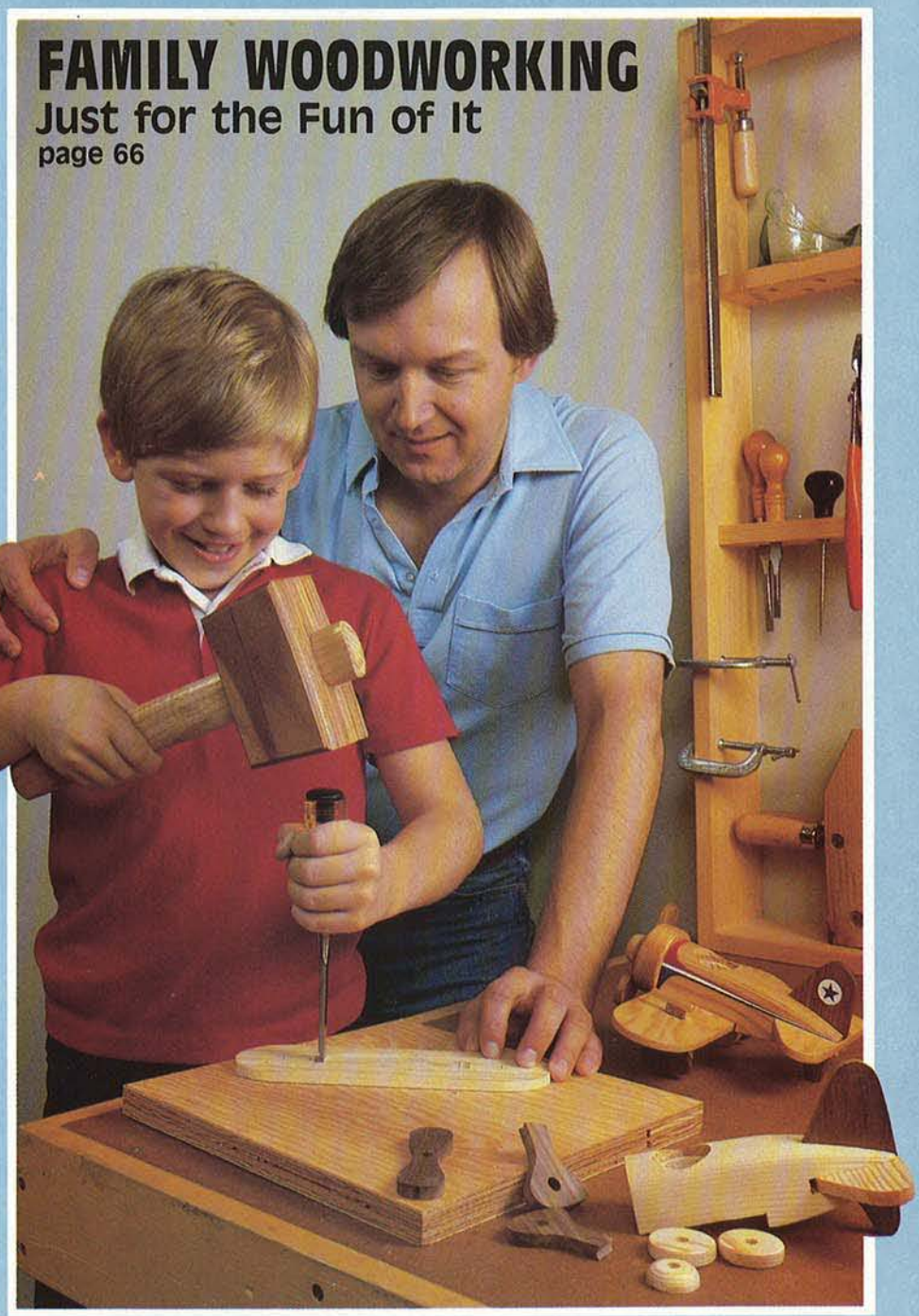
- **PLASTIC LAMINATES**
  Shop-tested guide to application
  Purchasing tips
- **TOOL SHARPENING**
  Do waterstones have the edge?
- **5 STRATEGIES**
  for stretching shop space
- **AIR COMPRESSORS**
  What one can do for you
- **PROJECTS THAT PLEASE**
  Parsons table
  Dining chair
  Light cover-ups
  2 terrific projects for kids to build



FAMILY WOODWORKING
Just for the Fun of It
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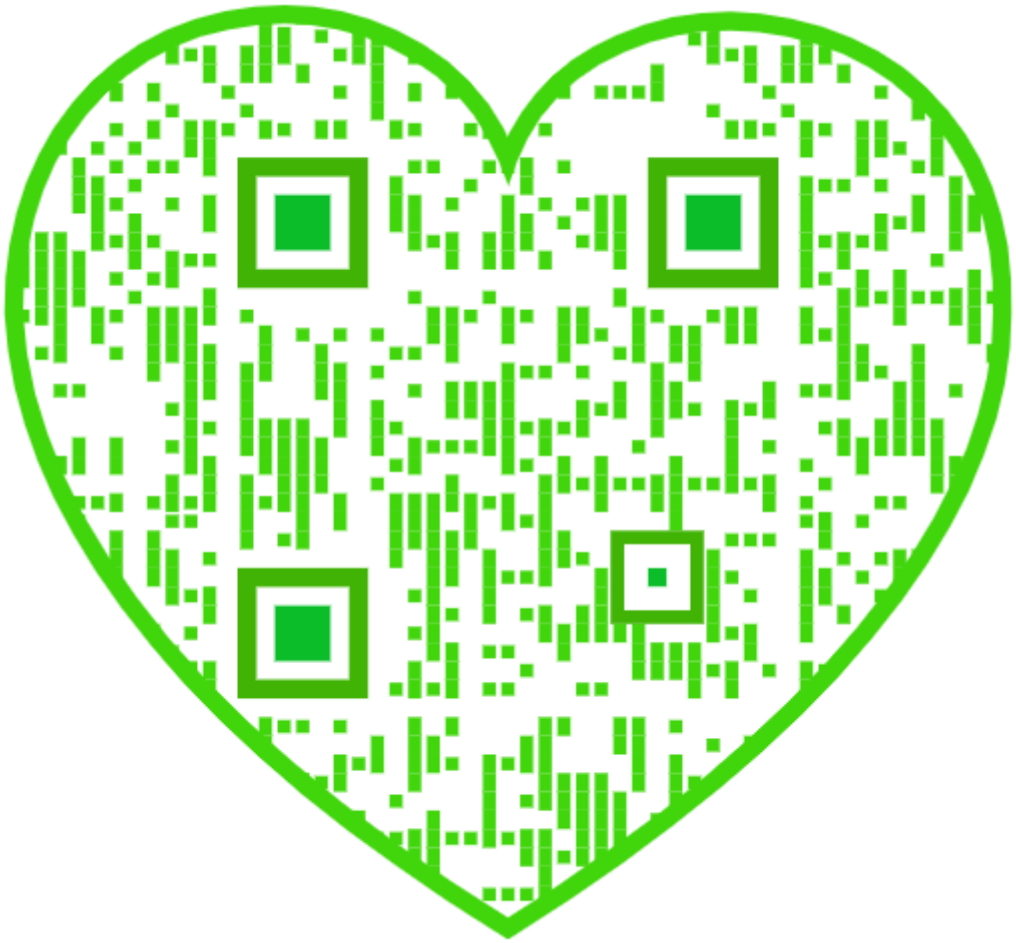

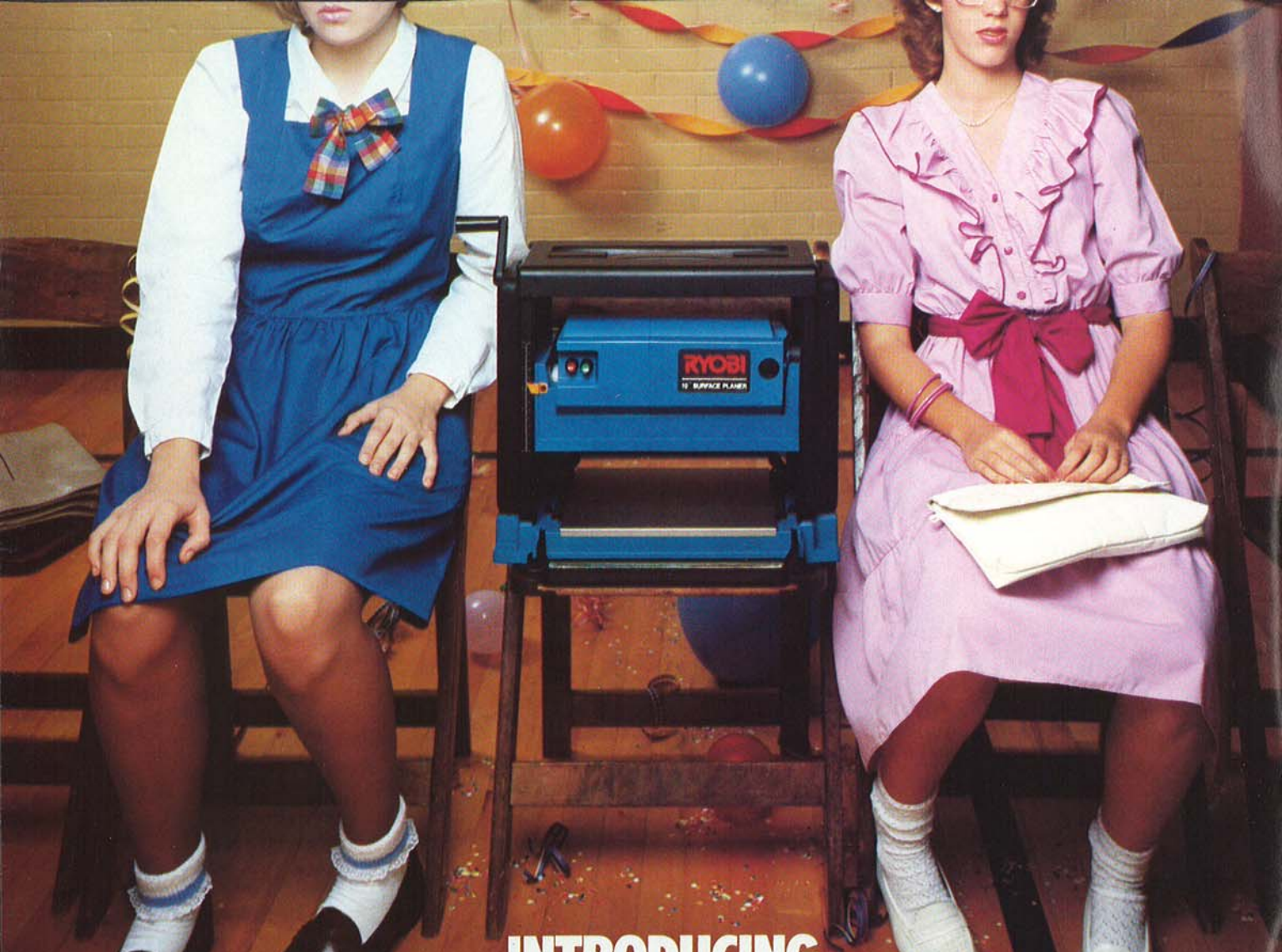

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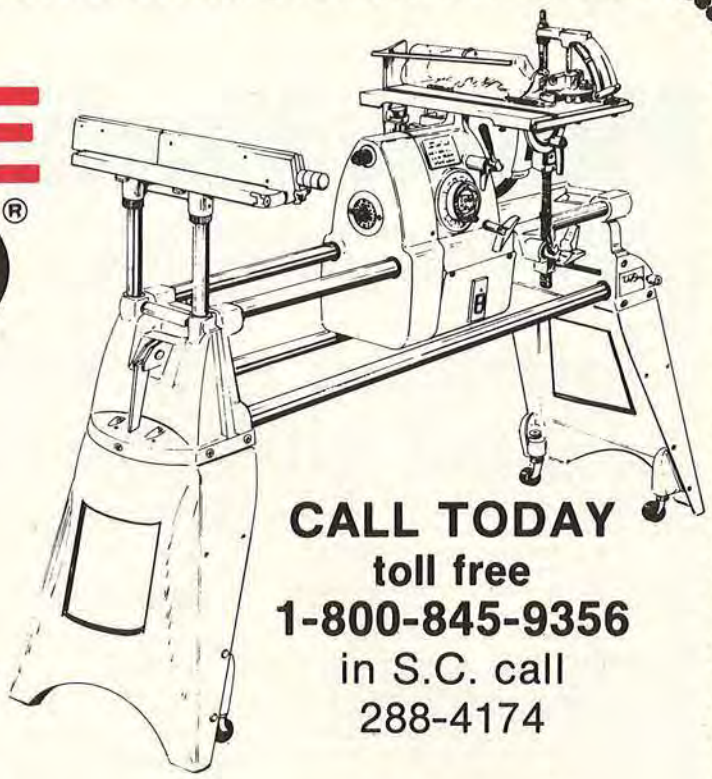

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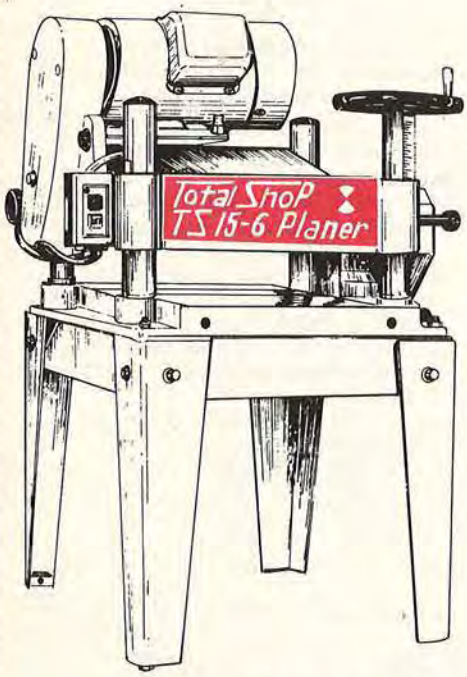

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This revolutionary invention, the *Paralok Table Saw Fence* makes cutting at least *seven times more accurate* than any other fence... much faster... and is super simple to operate.

Time was.

"We spent hours in the shop fighting with our rip fence and usually losing. Finally we retired it to a corner and resorted to a 1"x6" and pair of C-clamps. At least it was accurate. But crude and slow. We remember the test cuts, measuring front, blade and rear... tapping to get everything in place, only to repeat it again for the next cut."

We set out to solve the problem.

Our ideas lead to the invention of the Paralok Fence. It took three years to perfect it. Now it **is** perfect and accurate. How accurate? Accurate in thousands of test cuts to .002" or less. This Paralok Fence saves time and materials and that spells *money*. We call it the *money machine*.

In the two years we've been marketing the Paralok Fence nationwide, we haven't talked to one customer who doesn't agree.

How it works.

The Paralok fence works on the same principle as a drafting table. Super strong aircraft cable (5/64", 49 strand) runs in a closed loop around 6 precision ground nylon pulleys located underneath the rails. The aircraft cable is engaged by the fence in both the front and rear. Move the front end 1/64" and the back goes 1/64".

Single handed operation. Lift up the handle and slide the fence down the rails with one hand. Use the combination of the tape mounted on the front rail and the vernier cursor next to the handle to set the fence at intervals of 1/64". You'll march right through your cutting list without having to stop the motor.

Both the front and rear lock. Two hefty locks, each with 750 pounds clamping pressure, independently lock the fence to the front and rear rails without squeezing the rails together. No distortion at the rear, no kickbacks due to binding the material.

Owners tell us.

"I'm a believer, I've had the Paralok on for a week now and we won't part company. The action is smooth, the parallelness is absolutely dead on, and it locks with a commitment to purpose that should be an inspiration to us all." *G. B. Lee Baker, Redmond, Oregon*

"The Fence is incredibly accurate... It has cut the time of any saw work by a measureable amount... I wish we had gotten this fence about four years ago." *Bill Tongate, shop supvervisor, Valley Cabinet & Trim, Ridgecrest, California.*

More features.

The Paralok is easy to install, taking about 1½ hours or less. (It can also be mounted with an auxilliary fence.) The Paralok is easy to remove for cross-cuts. It gives you long infeed and outfeed for better control. The fence is always perfectly parallel, even when being reset for the next cut. The anodized aluminimum finish is tough, wear resistant and looks great. Because of such a smooth finish, material *glides* right through.

Fits almost all table saws.

The Paralok fits *Rockwell-Delta, Powermatic, General, Wadkin-Bursgreen, Walker-Turner, Oliver, Jet, Sears Craftsman*, and most others.

The important dimension is the depth of your table saw from front to rear. Then select from rails in six sizes: 4', 5', 6'8", 8'8". That is gross length. You decide how much you want to the right and left of the blade.

Standing behind our fence.

We're so confident you'll be more than pleased we offer a *five year warranty* on parts and labor for defective material or workmanship. And, if you're not satisfied with your Paralok, send it back in 30 days for a full refund.

For more information.

Give us a toll free call. We'll answer any questions and direct you to your nearest dealer (Dealer inquiries invited). If we don't have a dealer near you yet, you can place your order direct.

We figure the Paralok Fence makes about ten million existing fences obsolete. And the real bonus is that is pays for itself — quick.

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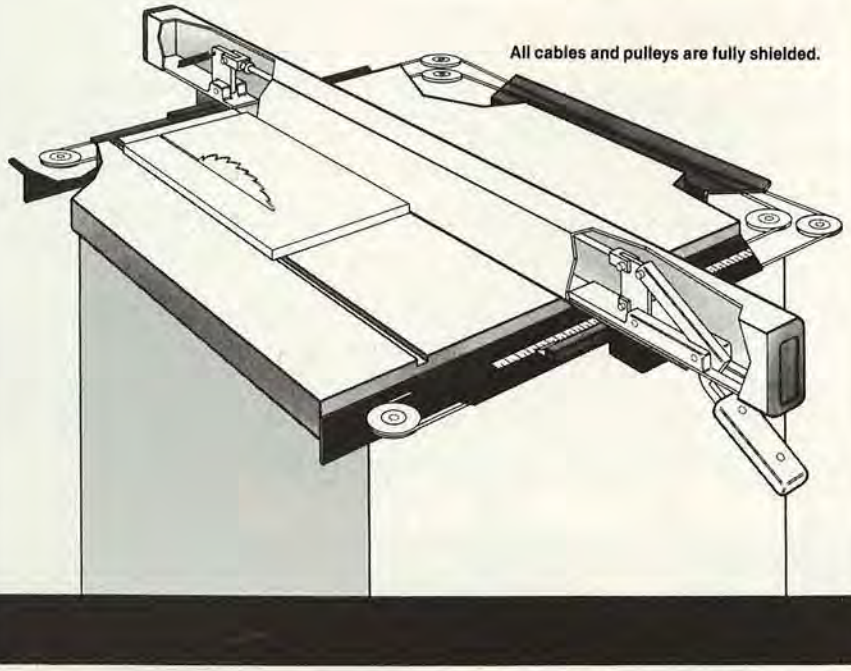

All cables and pulleys are fully shielded.

Better Homes and Gardens®
WOOD
THE MAGAZINE FOR HOME WOODWORKERS

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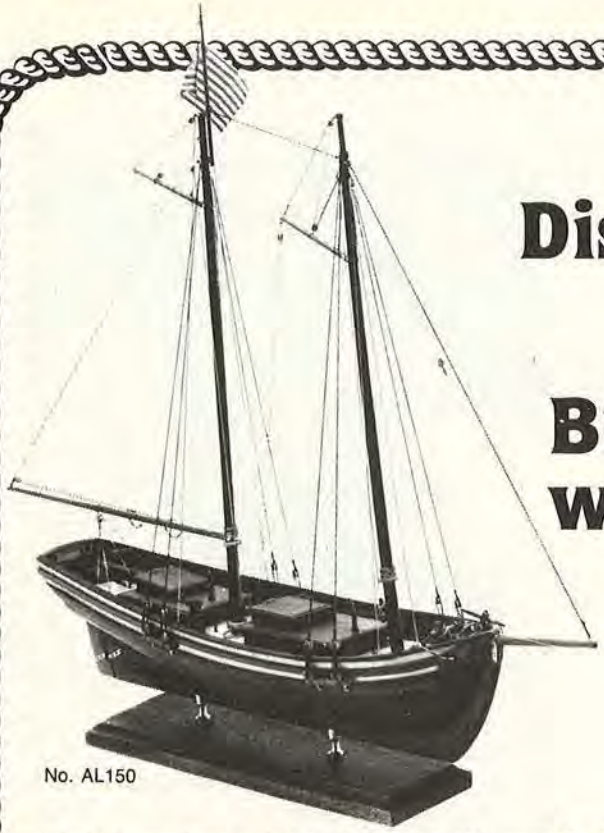
Discover the world's oldest hobby!

Build this beautiful wooden ship model.



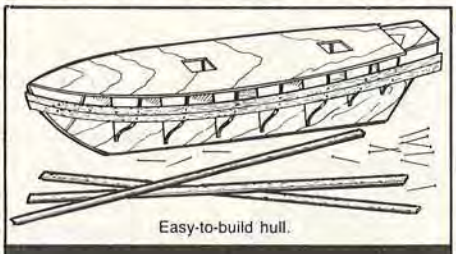
No. AL150

Special offer for those who have never built a ship before!

Wouldn't you love to build this historic ship model? It's a true-to-scale, 21" replica of the 2-masted schooner *Swift*, a Virginia pilot boat of 1805. Well, now you can! And you don't have to be a skilled craftsman to do so.

It really isn't hard

Even if you've never built a model before, you can experience the relaxing pleasure and pride of accomplishment that is offered by this fascinating hobby. You can build the *Swift*. The secret's in our kit, designed especially for the first time modeler, with pre-cut parts that make assembly easy. Clear, large scale plans and instructions that virtually take you by the hand and guide you every step of the way through hours of the most relaxing fun you'll ever have. And when completed—a museum quality model you'll display with pride, with gleaming brass fittings, walnut planked hull, delicate rigging—lifelike in every detail.



Easy-to-build hull.

Everything you need to build...included.

Quality you can see and feel

The materials in our kit may be better than those used in the original *Swift*. The keel section and frames are pre-cut plywood, ready for quick assembly. The *Swift*'s hull is planked twice; once with thick, flexible limewood for strength, then overlaid with planks of African walnut for lasting beauty.

You won't have to make the fittings—we've done that for you. Our kit contains ready-to-use blocks and deadeyes of rare, yellow boxwood. We include eyelets, bracers and belaying pins—over 70 parts of solid brass! Even the cabin door hinges are brass, as are the 250 miniature nails you'll use to fasten the planking to the hull and deck. And, since the original wooden *Swift* had no plastic parts, our kit doesn't either—*anywhere!*

Creative? And how! Overwhelming? Not a bit! But be prepared for hours of the most challenging, engrossing, relaxing fun you've ever had.

An "everything you'll need" special offer, with free tools and handbook.

We want to introduce you to this great hobby, *now!* So we've made it easy for you to get started. Our special offer includes the *Swift* kit plus all the tools you'll need to build her: pliers, hammer, knife, file, tweezers, sandpaper, glue, wood oil, and more. You'll also receive a free copy of "Ship Models from Kits," a 110 page beginner's guide. You don't have to buy anything else. The tools normally cost $17; the book retails for $7.95. But they're yours, FREE when you buy the *Swift* kit at its regular price of $39.95 (plus $4.00 for delivery).

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THE EDITOR'S ANGLE

I've got a confession to make. Until two weeks ago, I'd never carved anything other than a Thanksgiving turkey now and then. Not because I have anything against carving; I just thought I couldn't do it. As it turns out, I was not alone. None of the other *WOOD* staffers had much experience in this area, either.

That's all changed now. As part of our continuing education program, we spent a full day with woodcarver Harley Refsal learning about and doing some Scandinavian wood carving. Under Harley's able direction, each of us was able to transform a chunk of basswood into a cute little Scandinavian farmer by the end of the day. I've got to admit, though, that I had to ask Harley if he could somehow salvage the face on my carving so the farmer would look a bit less Neanderthal.

Carving has been good to me so far. And it sure made my recent stay while in Chicago on business more enjoyable. Usually, I either watch the tube or curl up with a good book or magazine. But not this time. I carved for a couple of hours before dinner, then went at it again later that night.

There is one potential problem with carving on business trips, though—getting through the airport X-ray scanners with a carving knife in your suitcase. But don't worry too much; I made it through twice!

QUITTIN' TIME

Print this article

Larry Clayton

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Does The Foley-Belsaw Pay? YOU BET!

READ WHAT OWNERS SAY:

A Good Investment • Robert Sawyer, Roseburg, Oregon: *"I believe that the Foley-Belsaw is the best investment I ever made. I've been a planer man for years and am now retired. The Foley-Belsaw has earned me $60,000 extra income in the past eleven years."*

Pays For Itself: • R.S. Clark, Springfield, Ohio: *"I bought a batch of walnut in the rough, and after planing it on the Foley-Belsaw I figured up the money I saved. It was enough to pay for two-thirds the cost of the Planer. It really does a good job."*

More Than Expected • Stephen Schultz, Orangeville, Penna.: *"This machine pays for itself by making money out of scrap boards. It is a very well built machine and I confess it is more than I really expected for the price. It does everything you say it will."*

... And Foley-Belsaw Is The Choice Of Professionals:

"I recommend Foley-Belsaw Planer-Molder-Saw as the most useful shop tool any craftsman could own. We use one every day in the Workbench model shop, and couldn't get along without it."

JAY HEDDEN — Editor WORKBENCH Magazine

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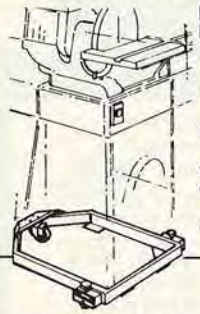

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WOOD

THE MAGAZINE FOR HOME WOODWORKERS

APRIL 1986 **ISSUE NO. 10**

WOOD PROFILE

ASH: THE HOME-RUN HARDWOOD 25

This sporting wood shows up in all sorts of athletic equipment, but its durability also makes it ideal for tool handles and furniture.

CRAFTSMAN CLOSE-UP

PORTRAIT OF A YOUNG CARVER 26

Ohio teen-ager Michelle Feasel is carving up a storm these days. Come see why her miniature wildlife figures command such attention—especially from her dad, who taught her the craft.

SHOP-TESTED TECHNIQUES

APPLYING PLASTIC LAMINATES 30

No, it's not exactly "wood." But plastic laminate is a key auxiliary material in many projects. Here's a guide to the basics of laminate application, as well as some surefire tips for special situations.

NOW YOU CAN BUILD IT

PICTURE-PERFECT PARSONS TABLE 36

A single sheet of ¾" plywood and another of high-gloss laminate join forces in this easy-as-pie project. The finished product is perfect for a conversation grouping like the one shown here. Or, adapt our design to your specific requirements.

FURNITURE PROJECT

PLEASE BE SEATED! SOLID OAK DINING CHAIR 40

No project demands more attention to snug joinery and properly scaled dimensions than a chair—however simple. This sturdy oak dining chair will remain wobble-proof, eye pleasing, and comfortable for years to come.

SHARPENING YOUR SHOP TOOLS

DO WATERSTONES HAVE THE EDGE? 46

More and more woodworkers sure seem to think so! We think we've learned some of the reasons why.

TOOL BUYMANSHIP

AIR POWER! WHAT AN AIR COMPRESSOR CAN ADD TO YOUR WORKSHOP 50

Yes, an air compressor can indeed earn its keep in your shop—and for more tasks than spraying finishes and blowing dust.

YOUR WORKSHOP

5 STRATEGIES TO MAKE SMALL SHOPS WORK *BIG* 54

Ready to set up a shop of your own—if only you can find the space? Or maybe you already have a small shop that seems to be contracting as your woodworking needs expand. Use these sample layouts and tips to stretch your shop space.

TWO BRIGHT IDEAS FROM OUR SHOP

THE OLD LAMPLIGHTER REDWOOD LANTERN 58

This appealing fixture of redwood, brass, and acrylic lends distinction to any outside entry or patio. Build one or a pair and enjoy the glow.

THREE-TIER WALNUT CEILING FIXTURE 62

You won't find another ceiling fixture that stacks up as handsomely. It's simply three mitered walnut frames joined to white acrylic and a mounting frame.

FAMILY WOODWORKING

TIME OUT FOR KIDS 66

This special section focuses on woodworking as a family hobby. Learn how to share your skills with youngsters. There's no greater satisfaction!

SIMPLY SPECIAL WREN HOUSE 68

It's an ideal project for a parent-child team to tackle in an evening or two. Build our wren house soon and welcome the first occupants this spring.

THE RED BARON, JR., TOY AIRPLANE 70

With your supervision, a youngster can handle most of the layout, cutting, and assembly of this high-flyin' project—depending on his or her age and skill level, of course.

SHORT-SUBJECT FEATURES

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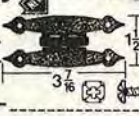
Woodworkers' Hardware ORDER FORM

Qty. Total

Note: C = 100



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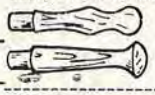

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Birch Furniture Spindles
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#S4 Galley Spindle
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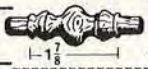
Oak $.35/ea. $.24/ea.



#S5 Galley Spindle
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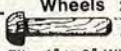

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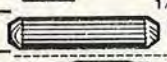

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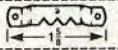

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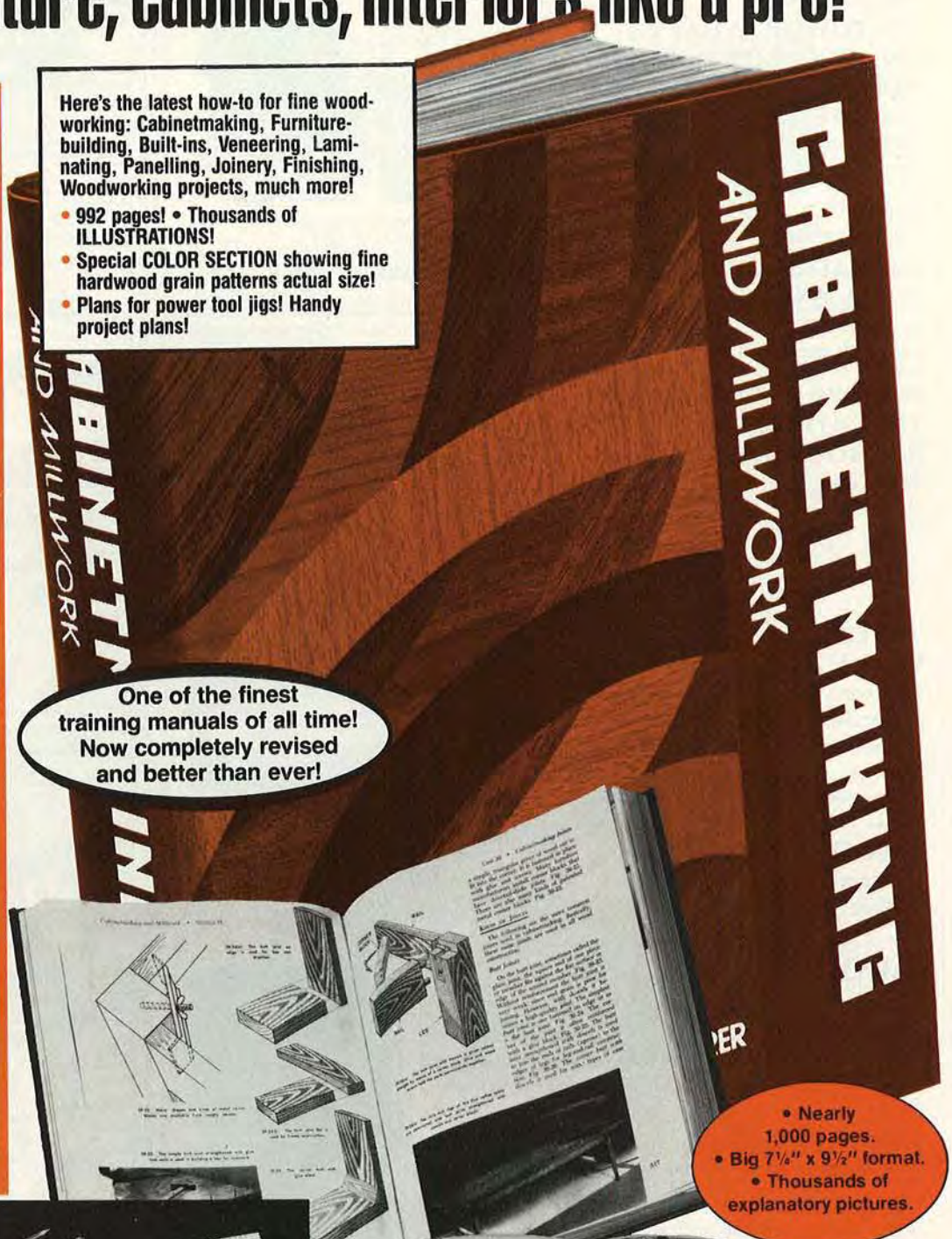

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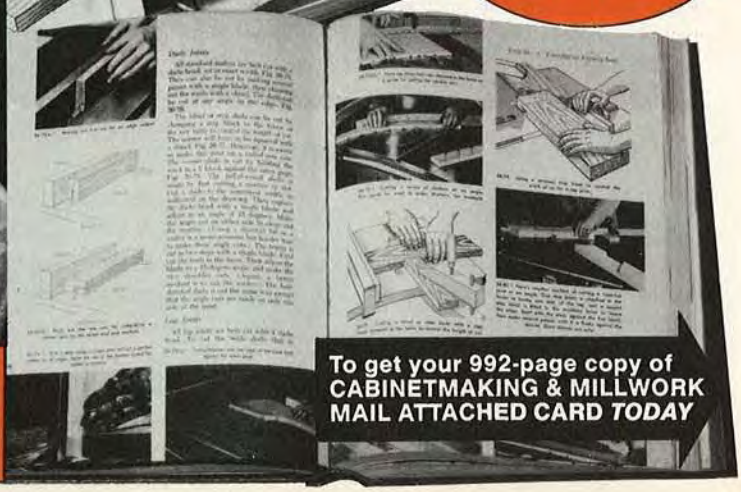

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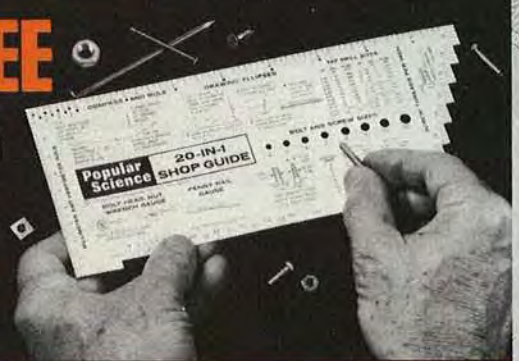

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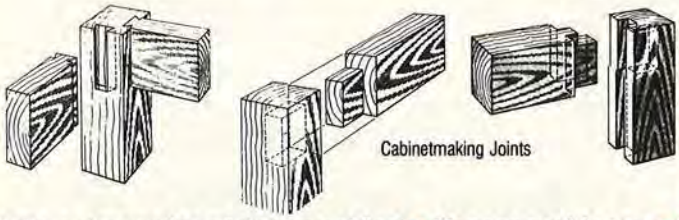

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by John L. Feirer

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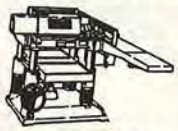

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TALKING BACK

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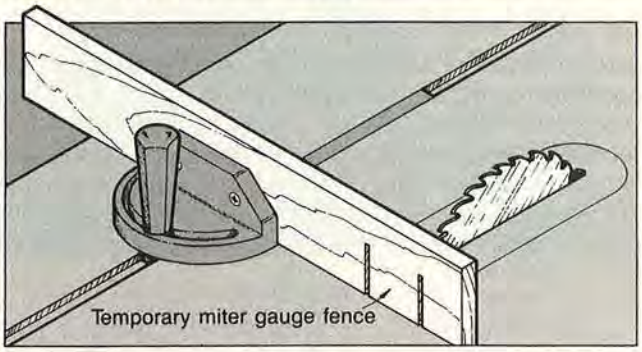
We welcome comments, criticisms, suggestions . . . even an occasional compliment. The volume of mail we receive makes it impossible to answer every letter, but we promise to do our level best. Send your correspondence to Letters Editor, Better Homes and Gardens® *WOOD* Magazine, Locust at 17th, Des Moines, IA 50336.

POSTSCRIPT TO A SHOP SAFETY TIP



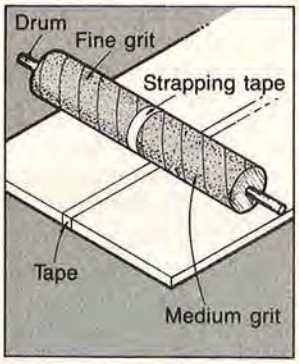
In your December, 1985 issue (p. 10), you printed a safety tip about flicking away small scraps from the table-saw blade with the eraser end of a pencil. There's another way: What I do is screw on a piece of, say, ½" stock just a little higher than the crosscut fence and let it extend about 2" on the blade side. Then, when I miter, I push the piece through and don't have to worry about flicking the small scrap piece into the saw blade.

—John Rendl, North Riverside, Ill.

MORE ADVICE ABOUT THE SURFACE SANDER

Few of our projects have generated as much enthusiastic response as the surface sander that appeared in our October, 1985 issue (p. 48). It sounds as if this homemade tool filled a void in a lot of workshops. Here's the latest tip we received from a reader who built one:

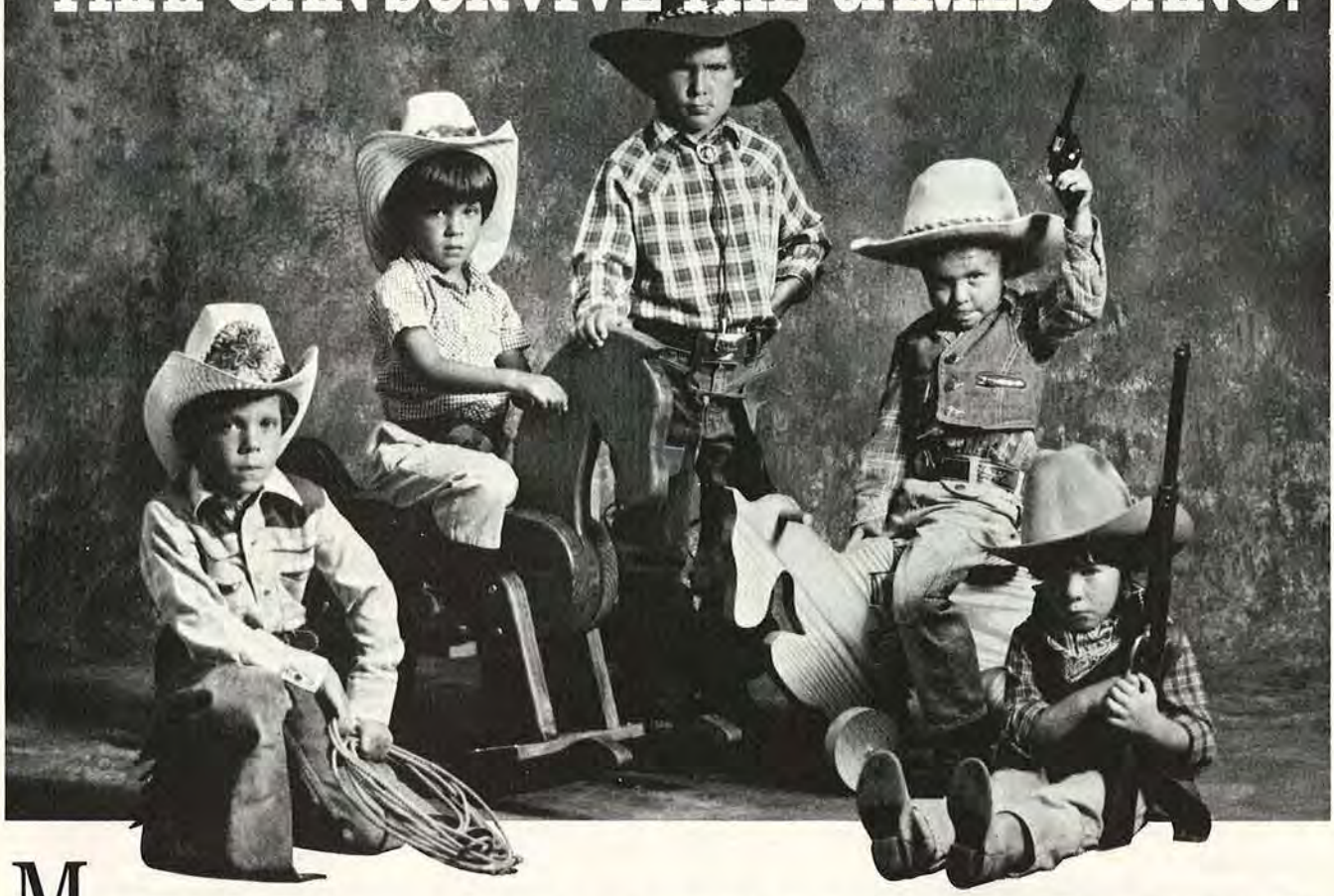
When using the shop-built thickness sander to sand boards 6" wide or less, wind one-half of the drum with medium paper and the other half with fine, instead of removing the sandpaper to change to a finer grit. Use strapping tape to hold paper on the drum. Another piece of tape is used to divide the infeed table. I am now looking for pillow blocks that easily can be removed so that a set of drums with different grits of paper can be made up and changed as needed.



—Joseph C. Denefeld, San Francisco, Calif.

Continued on page 78

SHOPSMITH® HELPS YOU BUILD A HORSE THAT CAN SURVIVE THE "JAMES" GANG!



Meet James and the gang. They're tough customers when it comes to toys. But their little broncos pictured here are just as rugged. Hand-built from solid oak, they'll ride tough for years to come, even with this rough and tumble bunch.

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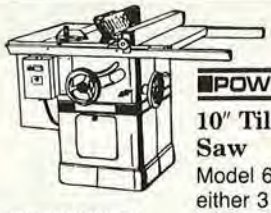

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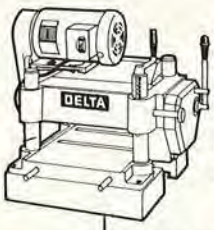
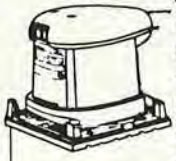


DELTA
RC-33 13" Planer
22-651
LIST $1729.00
SALE
$995.00



BLACK & DECKER
Palm Grip Sander
4008
LIST $76.00
SALE
$49.95

SPECIAL!
FREUD LU73 10x60th General Purpose ATB Saw Blade
LIST $79.65
$29.95
with the purchase of any three FREUD blades or cutters

Makita

Order No.	Description	LIST	SALE
2030*	12" planer/jointer	1980	1395
1805B	6" planer	416	265
1900BW	3" planer kit	154	90
2040*	15" planer	1780	1179
1100	3" planer kit	278	160
6800DBV	Drywall driver	123	89
5007NB	7" circular saw	158	100
JR3000V	Recipro saw	178	120
5402A	16" circular saw	468	315
3700B	Laminate trimmer	124	85
3612BR	Plunge router	286	180
6510LVR	3/8" VSR drill	114	69
6012HDW	Cordless drill kit	178	100
DP3720	3/8" VSR drill	88	55
DP4700	1/2" VSR drill	154	95
9030	1 1/8" x 21" belt sander	185	125
9401	4" x 24" belt sander	279	160
9501	4" sander/grinder kit	119	87
9900B	3" x 21" belt sander	198	120
9924B	3" x 24" belt sander	204	135
9924DB	3" x 24" dustless belt sander	214	135
B04510	Finishing sander	79	44
9045N	Dustless finishing sander	156	105

Metabo

Order No.	Description	LIST	SALE
EP564	VS barrel-grip jigsaw	239	186

BLACK & DECKER

Order No.	Description	LIST	SALE
3157	VS orbital jigsaw	178	120
3051	7 1/4" worm drive saw	232	140
3052	8 1/4" worm drive saw	247	170
3102	2-speed cut saw	156	93
3107	Cut-Saw®	188	130
2034	2500 rpm drywall Scrugun®	123	82
2037	4000 rpm drywall Scrugun®	146	91
3030	7 1/4" circular saw	159	99
3047	7 1/4" circular saw	232	150
3048	8 1/4" circular saw	246	159
4008	Palm grip sander	76	50
4247	4 1/2" grinder	105	68
1179	3/8" VSR Holgun® drill	116	70
1311	1/2" VSR Holgun® drill	157	104
1920	Reversible cordless drill	160	115
1980	reversible adjustable clutch cordless drill	179	129

VIRUTEX

Order No.	Description	LIST	SALE
081	Plate jointer	335	299
Plate #0		31	28
Plate #10		32	28
Plate #20		33	28
AU93	Veneer hand trimmer	20	18
U78	Veneer sheet trimmer	140	130

RYOBI

Order No.	Description	LIST	SALE
TS-251U	10" mitre saw with carbide blade	411	230
X2300	Vise, holder, bag kit for TS-251U		20
TS380	14" mitre saw	550	375
AP-10	10" portable thickness planer	659	425

DELTA Super Savings!

Order No.	Description	LIST	SALE
46-541*	Wood lathe with accessory package	2771	1399
46-140*	11" wood lathe	551	430
34-150	UNIFEEDER stockfeeder	574	199
34-155	Unifence adapter kit for 34-150	50	20
43-150	Shaper adapter kit for 34-150	199	95
34-781*	10" UNISAW 1 1/2 hp	1784	1499
34-782*	10" UNISAW 3 hp	2081	1850
34-783*	10" UNISAW 5 hp	2081	1850
34-784*	10" UNISAW 5 hp	2081	1850
34-172*	Tenon attachment for UNISAW	215	169
34-010S	9" mitre saw	231	170
15-091*	15" floor model drill press	486	375
15-231*	15" step-pulley drill press	1101	940
15-331*	15" VS drill press	1243	1062
23-650	6" bench grinder	173	139
23-750	7" bench grinder	283	240
23-850	8" bench grinder	330	282
28-243/62-142*	1/2 hp bandsaw	717	562
28-243/62-246*	3/4 hp bandsaw	818	645
28-283*	3/4 hp bandsaw	933	699
22-651*	RC-33 13" planer	1729	995
50-651*	Stand for RC-33	276	225
22-460*	20" planer 7 1/2 hp	4667	3990
22-461*	20" planer 5 hp	4667	3990
22-600*	24" planer 7 1/2 hp	6496	5554
22-602*	24" planer	10900	9310
22-610*	24" planer	6700	5725
33-150*	Sawbuck® frame & trim saw	707	519
31-730/52-611*	Finisher	1384	1180
33-890*	12" radial arm saw	1367	1050
33-990*	10" radial arm saw	606	469
34-621/52-493*	9" builder's saw	710	539
34-410/62-042*	10" contractor's saw	1032	799
34-429*	10" tilting arbor saw	1193	899
34-790*	14" tilting arbor saw	3933	3365
34-889*	10" scoring saw 3 hp	2950	2595
34-890*	10" scoring saw 5 hp	2950	2595
34-794*	14" panel saw	6109	5225
37-420*	16" precision jointer	4657	3980
37-220/50-290/62-247*	6" jointer	1139	975
37-220/52-891*	6" jointer	1292	1105
37-315/49-054*	8" jointer	1583	1355
40-601*	Electronic scroll saw	1074	859
50-180*	1 hp dust collector	463	389
50-181*	2 hp dust collector	658	550
43-122*	LD wood shaper	680	519
43-375*	2-speed shaper with 1/2" and 3/4" spindles	2111	1805
43-385*	2-speed shaper with 1" spindle	2111	1805
43-561*	Overarm router	2525	2158
43-780*	5-speed shaper 7.5 hp	3655	2950
43-781*	5-speed shaper 5 hp	3655	2950

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Order No.	Description	LIST	SALE
LU82M010	10" x 60th general purpose TCG	86	40
LU72M010	10" x 40th general purpose ATB	69	34
LU81M010	10" x 40th general purpose TCG	69	36
LU85M010	10" x 80th super saw ATB	111	65
LU84M011	10" x 50th combination 4&R	62	39
LM72M010	10" x 24th straight line	64	39
LU85M009	9" x 72th super saw ATB	102	64
PS203	7 1/4" x 24th general purpose ATB	27	18
PS303	7 1/4" x 40th general purpose ATB	33	24
DS308	#3 Dado	170	119
04-106	1/4" diam. solid carbide	11	8.80
16-100	1/2" diam. mortising bit C.T.	13	10
30-106	1/2" radius cove bit C.T.	34	25
32-100	1 1/4" diam. rabbeting bit C.T.	27	22
34-110	1/4" rounding bit C.T.	28	22
38-100	5/32" ogee bit C.T.	33	26
42-106	flush trimming bit	16	12
64-100	Solid carbide flush trim bit	7.64	6.10
66-100	Solid carbide 7° bevel bit	8.30	6.64
3557R	35mm dia. boring bit	32	25
06218	2 1/8" dia., 1/2" shank boring bit	89	69
C310	Set of 3-4" jointer knives	18	13
C350	Set of 3-6" jointer knives	27	19
C441	Set of 3-8" jointer knives	36	28

NOTE: All saws and Dado have 5/8" bore.
All router bits have 1/4" shank.
ATB = Alternate Top Bevel
4&R = 4 Teeth & 1 Raker Tooth
C.T. = Carbide Tipped

GRIGGIO

Order No.	Description	LIST	SALE
SCI-3200*	Sliding panel saw	8304	5995

CALL FOR COMPLETE GRIGGIO CATALOG

POWERMATIC

Order No.	Description	LIST	SALE
1660750TS*	10" tilting arbor saw 5 hp	2129	1825
1660760TS*	10" tilting arbor saw 3 hp	2129	1825
1680170TS*	12" tilting arbor saw 5 hp	2815	2395
1260100*	Shaper	2025	1799
1260050*	Shaper	2025	1799
1500040*	6" jointer	1188	999
1610040*	8" jointer	1870	1775
1610050*	8" jointer	1620	1499

PORTER-CABLE

Order No.	Description	LIST	SALE
9627	Tiger saw	194	132
9629	VS electronic tiger saw	194	142
7348	Bayonet saw	163	114
7548	Top-Handle jig saw	199	136
7648	Barrel-Grip jigsaw	199	139
314	4.5 amp saw	180	126
315-1	13 amp saw	166	108
346-1	12 amp saw	162	113
368-1	13 amp saw	177	123
587	14.5 amp saw	199	139
336	3x21 belt sander	180	126
337	3x21 belt sander dustless	190	133
360	3x24 belt sander dustless	280	196
361	3x24 belt sander	260	182
362	4x24 belt sander dustless	295	201
363	4x24 belt sander	280	196
503	3x24 worm gear dustless	510	357
504	3x24 worm gear	495	346
330	Finish sander	87	54
505	Finish sander	175	113
100	7/8 hp router	141	96
536	1 1/2 hp router	300	210
630	1 hp router	150	105
690	1 1/2 hp router	194	132
691	1 1/2 HP Router D/handle	218	153
537	1 1/2 hp router	315	220
518	Speedtronic router	490	343
520	3 hp router	460	314
513	HD lock mortiser	952	708
5009	Mortise & tenoning jig	50	35
9118	Porta-Plane kit	299	204
9652	Versa-Plane kit	419	293
319	Laminate trimmer	215	145
309	Laminate trimmer	130	91
310	Laminate trimmer	190	133
312	Laminate trimmer	205	143
9725	2-speed Porta-Band kit	405	277
9728	2-speed Porta-Band kit	499	341
695	Shaper table with motor	278	190
696	Shaper table	150	103
7540	VSR drywall driver	153	104
7545	Drywall driver	158	108
621	3/8" VSR drill	130	78
666	3/8" HD VSR drill	165	122
7514	1/2" drill	169	115
7511	3/8" pistol drill	164	112
97650	1/2" VSR drill kit	201	137

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TIPS FROM YOUR SHOP (AND OURS)

Print this article

In woodworking, as in life, no one knows it all. But through experience, we all discover—or stumble onto—better, safer, faster, or easier ways to do things. When we devise interesting tips or techniques, we'll share them with you in this column. And when you send us your favorites, we'll pay you $25 for each submission we publish. No shop tips can be returned. Mail your tips to:

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An eraser you'll almost never wear down

You should always carefully erase pencil marks before sanding wood projects, but laying your hands on a pencil with a "business end" on it isn't easy to do.

TIP: The cleaning stick that does such a fantastic job of dressing your abrasive belts makes just about the finest shop eraser you'll ever find. Use it for eliminating light pencil marks. It's tough and sure to last a long time.

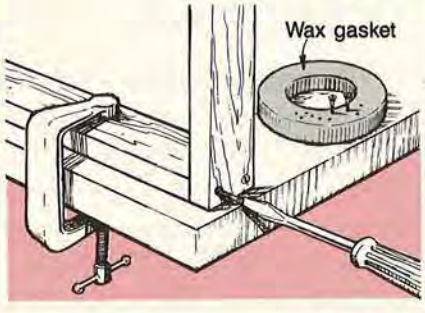
—William Becker,
Deep River, Conn.

No soap

Yuck! You use a bar of soap to lubricate wood screws, but it's a mess keeping the soap damp. In addition, soap can cause rusting.

TIP: Someone finally has found another application for the wax gaskets used as toilet bowl seals. The wax is ideal for lubricating screws and nails and reduces the chance of breaking screws driven into hardwood. It will not attract moisture and can be purchased at your local hardware store.

—Max Beard,
Silver Spring, Md.



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TIPS FROM YOUR SHOP (AND OURS)

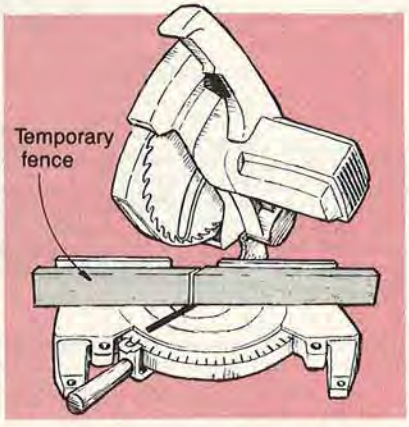
Continued

The chips are down

A power miter box is a slick device, but chipping and splintering can be a nuisance.

TIP: Use clamps or screws to secure a ½"-thick birch or maple fence to the back of the vertical guide. When the slot enlarges after prolonged use, replace it with another liner. You'll find these liners particularly helpful when the face side of molding is opposite the cutting direction of the saw blade.

—From the WOOD Shop

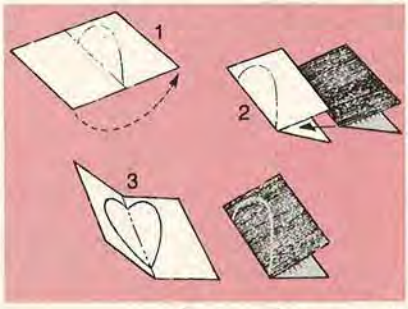


Mirror image in half the time

Drawing half of a full-size pattern is hard enough, but matching the pattern for the other side is just as taxing.

TIP: Draw one-half of your pattern on a piece of folded paper. Fold and insert a piece of carbon paper, carbon side out, into the folded pattern. Then trace the pattern, open the paper, and unfold a full-sized pattern with identical halves. Now transfer your "perfect" pattern.

—L.E. Masters, Holloman AFB, N.M.



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List		Your Cost
$ 10.85	5 Bi Metal Assorted Blades	FREE
199.50	Model 7548 Orbital Jig Saw - New!	$135.99
$210.35	Jig Saw Deal #1	$135.99
	+6.95 Shipping & Handling	

List		Your Cost
$ 2.50	1 Pr. Safety Goggles	FREE
134.00	Model 100 7/8HP Router	$90.00
$136.50	Router Deal #2	$90.00
	+5.95 Shipping & Handling	

List		Your Cost
$ 13.20	Dust/Mist Respirator w/Filter	FREE
190.00	Model 337 Dustless Belt Sander	$124.95
$203.20	Belt Sander Deal #3	$124.95
	+6.95 Shipping & Handling	

List		Your Cost
$ 13.20	Dust/Mist Respirator w/Filter	FREE
278.00	Model 695 1 1/2HP Router W/Shaper Table	$199.95
$291.20	Router w/Shaper Table Deal #4	$199.95
	+7.95 Shipping & Handling	

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TIPS FROM YOUR SHOP (AND OURS)

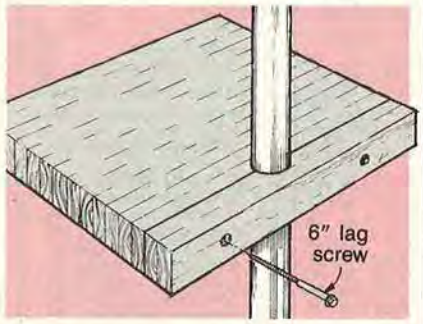
Continued from page 14

Outstanding in a supporting role

If you have a basement shop, there's a good chance you've cursed the steel posts that support beams in many newer homes.

TIP: Put those posts to work in your basement workshop as a stand for a grinder or drill press. Determine the size of the stand your tool requires, and glue a stack of 2×4s together. Now, lay out and cut a hole the diameter of the post, less 1/16" toward the rear of the table. Rip the lamination through the hole. Then "clamp" the two parts of the table around the posts with 6" lag screws.

—Gary Paine, Davison, Mich.

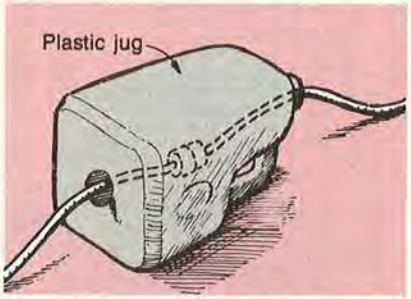


Shock treatment for power cords

When power-cord connectors are subjected to rain, the possibility of electrical shock increases.

TIP: An empty plastic milk jug can protect cord ends from moisture. Cut a hole in the bottom of the jug and enlarge the top if necessary to allow the male and female ends to pass through. Pull one cord entirely through the jug, connect, and suspend the connection in the middle of the jug.

—From the WOOD Shop



Continued on page 19

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Thorough step-by-step lessons and professional locksmithing equipment such as the Taylor KD5 Key Machine give you hands-on experience in this exciting growth field. You'll start earning huge cash profits of 800% to 900% duplicating keys. And only NRI offers you an Electronic Security Alarm training system.

Compare! NRI offers the only course that is nationally approved by the accrediting commission of the National Home Study Council.

Compare! NRI's course training has been broken down into 10 learning modules, each with the right number of lessons to keep your training at an easy-to-follow pace. All the lessons, hands-on training, and experiments have been developed to ensure that you begin practicing from the very first day... and can begin making cash as soon as you like. All the money-making secrets of a locksmithing trade will become yours with your NRI training.

Plus, only NRI gives you training in both locksmithing and electronics security systems in one complete course.

Start Your Own Business, Full or Part-Time, Even From Your Home

Add to your income with part-time work with established locksmiths... start your own part-time or retirement business in your own home... make locksmithing and security a full-time career as a skilled technician in your own growing business. There is opportunity everywhere!

NRI's free 4-color booklet will show you how quickly you can train to be your own boss in a profitable locksmithing business and gain the respect you deserve as a trained technician like other professionals in your community.

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- ☐ Computer Electronics with Microcomputers

Name (Please Print) Age

Street

City/State/Zip

Accredited by the National Home Study Council 1726-036

RYOBI TOOLS

		List	Sale
S500A	3x5½ Finish Sander	70	41
SU6200	Finishing Sand. ½ Sheet	142	88
B7075	3x21" dustless Belt Sand.	179	116
B7100	3x24" dustless Belt Sand.	208	140
B7200A	4x24" dustless Belt Sand.	269	165
D100VR	3/8"VSR 0-1200 rpm drill	91	49
W640	7¼" 13 amp circular saw	158	99
W740	8¼" 13 amp circular saw	171	109
JS60	Jig Saw-Single Speed	172	99
JSE60	Jig Saw-electronic v/speed	198	123
R150	1 H.P. Plunge Router	138	86
R330	2 H.P. Router	220	138
R500	3 H.P. Router	265	163
E3800	Drywall screwdriver 0-4000	126	79
L120U	3 5/8" Planer	142	89
BD1020R	3/8" 2-spd Cordless Drill w/free holster-Xtra special buy	148	95
TS251U	10" Mitre Box	300	169
SG1150C	4½" H.D. Mini-Grinder	99	59

YOUR ATTENTION PLEASE!
All Above RYOBI TOOL Prices
Take Additional 10% OFF Sale Prices

MILWAUKEE TOOLS

		List	Sale
0224-1	3/8 drill 4.5A magnum	159	109
0234-1	1/2 drill 4.5A magnum	159	115
0244-1	1/2 drill 4.5A magnum	159	115
0222-1	3/8 drill 3.3A 0-100 rpm	146	99
0228-1	3/8 drill 3.3A 0-1000 rpm	129	95
0375-1	3/8 close quarter drill – NEW – 3.5 amp	175	118
0210-1	3/8 cordless drill – NEW – 2 speed	154	114
6539-1	cordless screwdriver – NEW – 190 RPM	84	64
1007-1	½" drill 4.5A D-Hdle	199	145
1107-1	½" drill 4.5A D-Hdle	204	145
3300-1	magnum rt angle drive kit	249	170
3102-1	Plmbrs rt angle drill kit	263	180
1676-1	HD Hole Hawg w/case 2 sp	333	235
5395	3/8 sgle sp hammer drill kt	203	150
5397	3/8 var sp hammer drill kit	208	155
5371-1	HD mag. hammer drill ½"	287	207
5373	HD mag. ham. drill 3/8"	240	175
6511	2 speed Sawzall w/case	181	123
6226	port band saw 2 sp w/case	382	280
6234	TSC band saw port w/case	382	280
6365	7¼" circ. saw 13 amp	159	109
6405	8¼" circ. saw 13 amp	179	127
6460	10¼ " " 15 amp w/case	349	245
6377	7¼ HD worm saw 13 amp	235	155
6378	8¼ HD worm saw 13 amp	249	165
6165	12" Chop Saw 15 amp 4200 R.P.M.	267	189
6170	14" Chop Saw 15 amp 3600 R.P.M.	289	209
6255	v/sp Jig Saw 3.8 amp	199	140
6245	sgle sp Jig Saw 3.8 amp	175	125
6012	½ sheet HD Orb. sander	159	110
6014	½ sheet HD Orb. sander	169	115
5935	4" by 24" belt sander w/bag 10 amp	319	215
5660	1½ HP router 10 amp	256	175
5680	2 HP router 12 amp	314	220
8950	Wet/Dry 8 gal vac 6 amp	145	110

BENCH GRINDERS

4901	¼ HP 2.6 amp 24#	159	110
4921	½ HP 4 amp 26#	179	130
4891	½ HP 4 amp41#	279	195
5041	¾ HP 8.2 amp 58#	379	270

DRYWALL SHOOTERS

6753-1	3.5 amp 0-4000 rpm new	115	79
6747-1	4.5 amp 2500 rpm	144	100
6750-1	4.5 amp 0-4000 rpm	129	90

MILWAUKEE Super Specials!

Model 6507 Trigger Speed Control Sawzall w/case & blades . . . . List 193. ★ Sale 125.

Go Cordless with MILWAUKEE

#6305 – 6¼" Cordless Circular Saw
12 volt — 1 Hour Charge
Cuts (60) 2x4's (Pine)
List Price 195.00 ★ SALE PRICE 135.00

FREUD SAW BLADES

Univ. Bore — Professional Series
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
PS203	Gen'l Purp.	7¼"	24	27.24	17.50
PS303	fine cutting	7¼"	40	32.97	20.50

5/8" Bore — Industrial Grade
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen'l Purp.	10"	40	68.58	34
LU81M010	Gen'l Purp.	10"	40	69.30	35
LU73M010	Cut-Off	10"	60	79.65	36
LU82M010	Cut-Off	10"	60	86.40	44
LU84M010	Combination	10"	40	70.99	36
LU84M011	Combination	10"	50	74.51	37
LU85M010	Super Cut-Off	10"	80	110.88	62
LM72M010	Ripping	10"	24	64.85	34
DS 306	6" Dado			139.00	92
DS 308	8" Dado			170.00	105
TR 100	3 blades & Dado set			399.00	255

FORSTNER BITS (ARCO)
West Germany

Model	Size	List	Sale
2121	1/4	6.40	4.00
2122	3/8	7.00	4.50
2123	1/2	7.80	5.00
2124	5/8	10.35	6.50
2125	3/4	10.95	7.00
2126	7/8	11.40	7.25
2127	1	12.25	7.75
2128	1-1/8	12.75	8.00
2129	1-1/4	13.85	8.75
2130	1-3/8	16.45	10.50
2131	1-1/2	18.15	11.00
2132	1-5/8	21.25	14.50
2133	1-3/4	23.95	16.50
2134	1-7/8	25.50	17.50
2135	2	26.25	18.25
2136	2-1/8	30.50	20.50

16 Pieces *(one of every size of above)*
List Price 254.80 ★ SALE PRICE 150.00
4 Pieces *(1/2 - 5/8 - 3/4 - 1")*
List Price 38.95 ★ SALE PRICE 25.00

MAKITA TOOLS

		List	Sale
B04510	Sander	79	43
9900B	3"x 21" belt sander	198	119
9924B	3"x 24" belt sander	188	135
9924DB	3"x 24" b/sand. w/bag	214	130
9035	⅓ sheet finish sander	79	48
9045B	½ sheet finish sander	156	90
9045N	½ " " "w/bag	158	105
4200N	4-3/8 circ. saw 7.5 amp	152	95
5008NB	8¼ circ. saw 13 amp	178	105
5201NA	10¼ circ. saw 12 amp	348	215
4300BV	v/sp jig saw 3.5 amp	192	120
4301BV	orb v/sp jig saw 3.5 amp	208	125
2401BW	10" mitre saw	329	185
2400BW	10" mitre saw (for vice)	389	249
JR3000WL	2 sp recip saw w/case	168	120
JR3000V	vs recip saw w/case	178	120
6010DWK	3/8 cordless drill w/case	152	89
5081DW	3-3/8 cordless saw kit	165	109
1900BW	3¼" planer w/case	154	92
1100HD	3¼" planer w/case	278	160
3608BK	¾ hp router w/case	132	85
3601B	1-3/8 hp router	168	115
3700B	½ hp trimmer 28,000 rpm	124	82
B04530	6" Round Sander	84	55
6710DW	Cordless Screwdriver	148	105
DA3000	3/8" angle drill	158	105
DP4700	½ v/sp w/rev " 4.8 amp	154	92
HP1030W	3/8 v.s.r. hammer drill w/case	145	98
6300LR	½" angle drill w/rev	229	152
8418B-2W	½" 2 sp. hammer drill w/case	238	150
GV5000	Disc Sander	79	53
6800DB	2500 rpm 3.5 amp	123	79
6800DBV	0-2500 rpm 3.5 amp	133	89
6801DB	4000 rpm 3.5 amp	123	79
6801DBV	0-4000 rpm 3.5	133	89
2030n	12" planer/jointer	1980	1350
2040	15-5/8" planer	1780	1195
1805B	6-1/8" planer kit w/case	418	265
LS1400	14" Mitre Box	578	410

★ *NEW* from MAKITA! ★

Model		List	Sale
9820-2	Blade Sharpener	235	160
6602DWK	3/8" 2-sp c/less drill kit	154	94
6010SDW	3/8" cordless drill rev	82	45
DA3000W	3/8" c/less angle drill	172	105
JV1600	var. speed jig saw	145	89
JV2000	var. speed orb. jig saw	165	100
4300DW	cordless jig saw	158	102
5005BA	5½" circular saw 8 amp. with brake	154	98
5600DW	6¼ c/less circ/saw	224	139
9207SPC	7" var/speed elecronic sander/polisher	209	130
9303BH	4½" sander-grinder kit	146	95
9035DW	c/less finishing sander	128	79
4014NV	var/speed blower	128	79

DELTA

		List	Sale
34-621	9" contr. saw w/o motor	500	395
34-410	10" contr. saw w/o motor	871	650
34-710	super 10" motorized saw	579	450
15-091	15" floor model D/press	467	375
15-090	15" bench model "	467	375
37-207	Saw/Jointer Combination	1018	810
37-609	6" Motorized Jointer	413	335
37-290	4" deluxe Joiner w/o motor	348	275
22-851	RC-33 — 13" Planer	1943	1450
43-122	Wood Shaper w/stand and 1 HP Motor	669	495
46-140	11" lathe, gap bed model w/stand w/o motor	407	335
52-493	1 hp motor for #34-621	170	130
62-042	1½ hp motor for #34-410	230	170
62-144	½ hp motor for #37-290	138	105
62-142	½ hp motor for #28-243 and #46-140	121	85

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#314 4½" trim saw
List 180 . . . . . SALE 109

#348-1 6½" top hdle
List 161 . . . . . SALE 100

#617 7¼" Push Hdle
List 166 . . . . . SALE 103

#587 7¼" Speedtronic
List 199 . . . . . SALE 125

#315-1 7¼" Top Hdle
List 166 . . . . . SALE 103

#368-1 8¼ Top Hdle
List 176 . . . . . SALE 110

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List 658 . . . . . SALE 499

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3 wheel
List 449 . . . . . SALE 349

#28-283 14" Band Saw with enclosed Stand and 3/4 hp Motor
List $897.00
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#22-651 13" Planer
List $1943.00
Sale $1295.00

SUPER CORDLESS SPECIALS from BLACK & DECKER

Model	DRILL KITS	List	Sale
1930	3/8" rev/ hi speed	165	110
1950	3/8" High Torque	165	110
5930	Reversible Hammer	179	120
1970	3/8 rev/hi torque screwdriver	179	120
1980	Rev/ adj. clutch Scrudrill	179	120

BRAND NEW! SUPER SPECIALS from MILWAUKEE

		List	Sale
0214-1	3/8" c/less driver/drill	154	109
8975	H.D. Heat Gun, 11.6A Low 570°F - High 1000°F	69	49
5920	belt sander 3x24 w/o bag	289	199
5925	belt sander 3x24 w/bag	309	215
5930	belt sander 4x24 w/o bag	299	209
5935	belt sander 4x24 w/bag	319	225

BRAND NEW! BLACK & DECKER

#9425 8¼" Compound Mitre Saw
Special Sale Price — $115.00

PORTER-CABLE *(buy of the year)*

Model 621 REVERSING DRILL
3/8" H.D. var/speed-4 amp 0-1000 rpm
List 120 . . . . . SALE 72
6 or more $69.00 each

★★ *ROUTER RIOT* by PORTER-CABLE ★★

Model		List	Sale
100	7/7 H.P. 6.5 amp	134	86
630	1 H.P. 6.8 amp	145	95
690	1½ H.P. 8 amp	189	125
691	1½ H.P. D-Hdle 8 amp	213	135
536	1½ H.P. Speedmatic Double Handle	295	185
537	1½ H.P. Speedmatic Double Handle	310	210
520	3 H.P. Production	435	275
518	3 H.P. Micropressor 5-sp	475	310

TRIMMERS by PORTER-CABLE

309	3.8 amp laminate trimer	120	78
310	3.8 amp laminate trimmer	180	120
312	offset base laminate trim	195	130
319	tilt-base laminate trim	205	135

★ *X-TRA SPECIALS* ★

MAKITA TOOLS

		List	Sale
6010DL	C/less Drill w/flashlight charger & case	162	90
DP3720	3/8 drill Rev. 0-1800 rpm	90	47
6510LVR	3/8 drill Rev. 0-1050 rpm	116	67
6013BR	1/2" Drill Rev. 6 amp.	174	100
5402A	16" Circular Saw-12 amp	468	315
2414	14" Cut Off Saw-13 amp	282	169
3612BR	3 HP Plunge Router	296	175
9401	4x24 belt Sander w/bag	248	160

PORTER-CABLE

		List	Sale
696	H.D. Shaper Table	150	105
695	H.D. 1½ hp Router/Shaper	278	190
399	Drywall Cut-Out Unit	100	70
736	V/Speed *Speedtronic* Band Saw	450	330
7564	½ " X.H.D. Drill 8 amp	205	145

BOSCH TOOLS

		List	Sale
1581VS	Top Handle Jig Saw	225	126
1582VS	Barrel Grip Jig Saw	128	118
1604	1¾ H.P. Router	199	110
1942	Heat Gun 650° — 900°	99	65
1272	3x24" Belt Sander	259	159
1272D	3x24" Belt Sander w/bag	274	169
1273	4x24" Belt Sander	274	169
1273D	4x24" belt sander w/bag	289	179

DELTA

		List	Sale
34-010	Motorized Mitre Box	231	149

★ NEW LOW PRICES ★
PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
#50	for ¾" Black Pipe	11.23	7.40	80.00
#52	for ½" Black Pipe	9.36	6.10	67.50

JORGENSEN HAND SCREWS

Model	Jaw Length	Open Cap.	List	Sale	Box of 6
#5/0	4"	2"	11.59	7.25	39.15
#4/0	5"	2½"	12.45	8.10	43.75
#3/0	6"	3"	13.35	8.50	45.95
#2/0	7"	3½"	14.35	8.95	48.35
#0	8"	4½"	15.97	9.95	53.75
#1	10"	6"	18.25	11.35	61.25
#2	12"	8½"	20.94	13.50	72.95
#3	14"	10"	28.58	18.75	91.35
#4	16"	12"	34.56	23.75	128.25

JORGENSEN BAR CLAMPS
STYLE 37 — 2½" Throat 1/4" x 3/4"

Model	Jaw Length	List	Sale	Lots of 6
#3706	6"	7.88	5.50	29.70
#3712	12"	8.73	5.95	32.13
#3718	18"	9.84	6.95	37.53
#3724	24"	10.54	7.35	39.69
#3730	30"	11.76	8.25	44.55
#3736	36"	12.85	8.95	48.33

Who Has The Saws That Cut It Across The Board?
BLACK & DECKER of course!!!

Model	WORM DRIVE SAWS	List	Sale
3050	6½" 12 amp - 4600 rpm	247	169
3051	7¼" 13 amp - 4300 rpm	232	149
3052	8¼" 13 amp - 4300 rpm	247	169
	SUPER SAWCATS		
3047-09	7¼" w/brake - 12.5 amp	226	149
3048-09	8¼" w/brake - 13 amp	240	155
	BUILDERS SAW CAT		
3030	7¼" 13 amp - 5800 rpm	155	100
3035	8¼" 13 amp - 5800 rpm	175	125
3034	7¼" 13 amp - 5800 rpm	162	115
3033	6½" 13 amp - 5800 rpm	162	115
	JIG SAWS		
3157-10	var/sp orb action d/hdle	174	115
3153-10	var/speed 4.5A 0-3100	158	105
3159-10	2/sp orb action barrel grip	178	120
	CUT SAW KITS		
3103	2 sp 6 amp-2400 strokes	163	100
3105	V/Sp 6 amp-2300 strokes	170	110
3107	V/Sp orb 6A 0-2300 strokes	183	119
4300	Drill Bit Sharpener	299	205
1321	½" drill 450 rpm 6 amp	175	115
4010	Palm Sander	80	48
4015	½ Sheet Finish Sander	160	105
	DRYWALL GUNS		
2034	v.s.r. 0-4000 rpm	121	79
2037	v.s.r. 0-4000 rpm	139	89

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		List	Sale
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6012HDW	Cordless Drill w/Battery & Case	178	98
5007NB	7¼" Circ. Saw	158	94

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648	HD s/s bayonet saw 3 amp	255	169
9627	2 sp. tiger saw kit 8 amp	183	118
505	H.D. ⅓ sheet finish/sander	165	103
330	spd bloc sander ¼ sheet sz	87	54
304	Professional 7" disc sander	160	105
305	Professional 7" polisher	160	105
7511	3/8"xtra hvy v/s drill 5.2 amp	154	100
7554	½" xtra heavy drill 8 amp	205	135
309	3.8 amp laminate trimmer	120	80
310	3.8 amp laminate trimmer	180	130
312	offset base laminate trim.	195	135
319	tilt base laminate trimmer	205	140
167	block plane 2.5 amp	129	86
9652	Versa-Plane Kit	419	285
9118	Porta Plane Kit	289	195
97650	½" dual range var/speed hammer/drill kit w/case	201	130
	DRYWALL SHOOTERS		
7544	5.2 amp — 2500 r.p.m.	154	100
7545	5.2 amp — 0-2500 r.p.m.	154	100
7548	5.2 amp — 4000 r.p.m.	149	100

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PHE 16RL	3.8 amp 5/8" capacity in concrete	289	175
PH 210	5.2 amp-3/4" capacity in concrete	398	260
PHE 20	Same as above — except var/sp 0-750	418	270
PHD 26	6.3 amp-1" capacity in concrete	495	320
PH 38	7.5 amp-1½" capacity in concrete	549	355

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387	6½" Worm Saw	239	149
825	8¼" Worm Saw	270	185
807	7¼" Skilsaw 13A-Super	153	100
808	8¼" Skilsaw 13A-Super	172	110
2016-02	3/8" Cordless Drill complete W/Charger Case & 2 batteries	199	99

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Model		List	Sale
33-116	PL-316 ¾" x 16' Rule	15.95	7.50
33-320	PL-320 ¾" x 20' Rule	18.95	7.95
33-425	PL-425 1" x 25' Rule	18.95	8.95
33-430	PL 430 1" x 30' Rule	20.95	9.95

TIPS FROM YOUR SHOP AND OURS

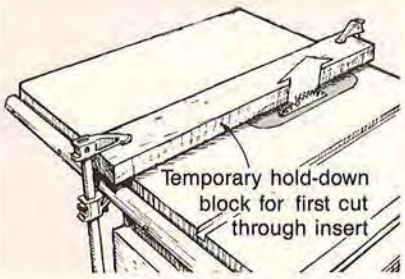
Continued from page 17

Chip-free dadoing on the table saw

It's all too easy to chip the thin veneers covering plywoods when you use dado blades and a dado-blade insert on your table saw.

TIP: Make your own insert that will undergrid the plywood (or any wood, for that matter) with support and reduce chipping. With a scroll saw, band saw, or jigsaw, cut out an insert blank from the correct thickness of plywood or solid stock. After you've mounted the blades, install and secure the blank. Then raise the blades to the proper cutting height. Now you will be cutting with maximum support.

—Arnold J. Schafer, Yakima, Wash.

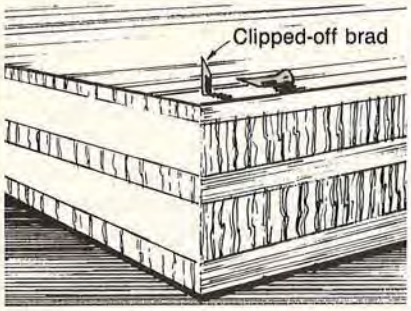


Take the slip out of slick glue

When you apply pressure to boards or sheet goods that you're trying to surface-laminate, the stack wants to slide around.

TIP: To prevent this from happening, drive wire brads into the material before applying the glue. Snip off the brad head at a sharp diagonal. Now apply glue and, after aligning the boards, tap them together with a mallet.

—C.P. Squires, Warrensville, N.C.



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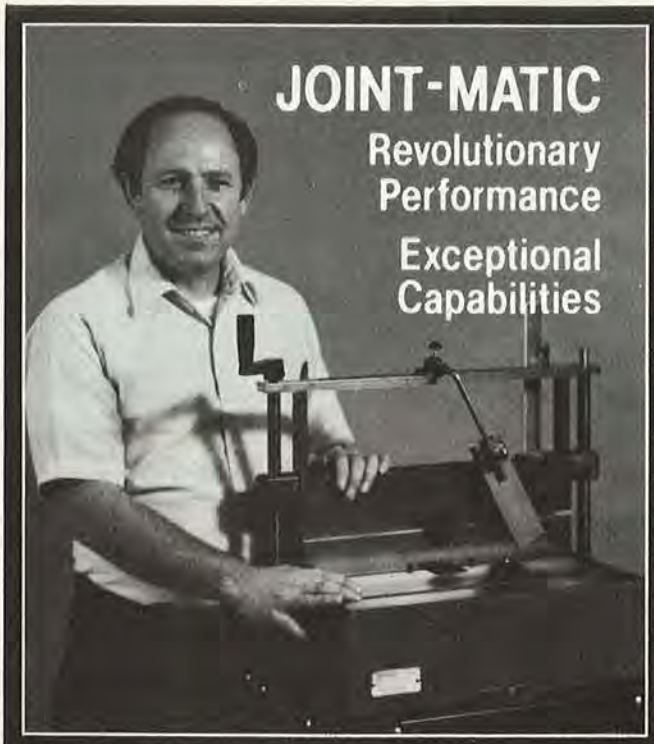

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On the fun side, AFA invites you to help find a national champion in its National Register of Big Trees, a list of the largest trees in about 680 native species. The Association also offers group tours of natural monuments, wildernesses, and backcountry.

A voice in the wilderness: Speaking out on the issues

You could join AFA for the educational resources or just the fun. The real bond that ties together members, though, is an urgent belief that each of us has a responsibility to protect and intelligently use our forests and related resources. AFA membership gives you a voice in the future of our forestlands. Through AFA, you can make a difference on problems such as acid rain, endangered animal habitats, deforestation, soil erosion, or domestic lumber pricing.

"AFA has a reputation of not being biased because we go out of our way to present several sides to a question," explains Rita Malone, membership director. "Because of this, our testimony is highly valued on Capitol Hill."

With AFA, you can be an active part of the solution. Get your hands in the soil through national programs that are tailored to your area—such as planting trees in cities or improving public lands.

Annual membership dues are $24. Sign up in 1986 and AFA will send you a blue spruce seedling (from a nursery in your area at planting time).

For more information and a membership application, write: *Rita Malone, Director of Communications and Membership, The American Forestry Association, Dept. W, 1319 18th St., NW, Washington, DC 20036.*

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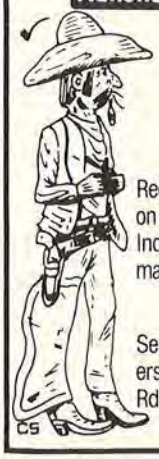

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SHOP FOR PARTS, NOT BOARD FEET

Print this article

In the woodworking classes I've taught over the years, it amazes me how students who know how to cook and sew have less difficulty buying project lumber than those who don't. Maybe it's because they're used to thinking in terms of quantity—how many batches of cookies they can get from one pound of flour, or the pairs of curtains in six yards of 36"-wide fabric. Then again, maybe it's because they don't have preconceived notions about how to buy hardwood lumber.

The rest of us get all caught up in board feet. I knew one woodworker who calculated how many board feet he needed for a project, then phoned the lumberyard to have it readied for pickup. When he got there, his ten board feet were all in one large board—2" thick × 6" wide × 10' long!

Use cutting diagrams when you buy

Like yards in a fabric store and pounds in a meat market, board feet only represent a unit of issue—the basis on which cost is calculated. More important when you shop is the ability to look at a board and see the parts you need.

Hardwoods come in random widths and lengths, so each board varies in dimension. You can't calculate your needs in the 1×6s, 2×4s, and 1×2s of construction-grade lumber and expect to find hardwood in those dimensions.

That's where cutting diagrams, such as those we furnish with many projects in *WOOD*, come in handy. Take a cutting diagram to a hardwood dealer and he'll help you select the boards that will make the parts you need. If you have a project plan without a cutting diagram, make one.

Plan it out in *units*—the end panels, the top, the back, the legs, etc. When you plan to cut all the parts for one unit from a single board, all the pieces in that unit will match in grain and color.

Buy enough stock for usable waste

The biggest mistake people make in buying stock is not buying enough. If you buy sufficient wood the first trip, you won't have to stop working to make a second. Even more importantly, if you buy enough the first time, all your wood will come from the same pile. That often means the same tree, with little or no variation in figure or color.

Buying just enough stock to leave only an inch or two of cutoff in length proves to be penny-wise and pound-foolish, too. Buy your stock *long* and have enough left to make something later or to replace a ruined part.

You can edge-join long, narrow scraps to make up width in a future project. When you buy long, length will be there when you need it. You can't make up length, as you can width. It doesn't pay to be overly dollar conscious when buying stock.

Save on "discount" plywood

Most lumberyards have "scratch and dent" bins where you can save big on damaged (often only slightly) hardwood plywood. You can patch or cut off bad spots.

Remember that you can also laminate a thin, premium sheet to thicker, lesser-grade plywood, such as CDX, to make up for thickness. This works great for the sides in a chest of drawers. You'll have a good-looking panel, and can pocket the difference between your lamination and a thicker, premium sheet.

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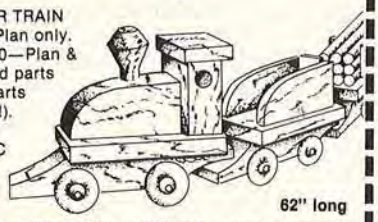

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ASH
the home run hardwood

On the Baltic's northern shores, where ash once grew thick and tall, ancient Scandinavians called the tree *Yggdrasil*. Its branches were said to hold the gods, its trunk their path to earth, and its roots the way to the underworld.

American Indians pounded "basket ash" to soften it for peeling into weaving strips. Canoe paddles were made from it, as well as tomahawk handles and spear shafts.

Today, the handles of many picks, shovels, rakes, and axes are made of ash. It also may be the most sporting wood around, the mainstay in laminated-wood tennis racquets, hockey sticks, and skis. Baseball bats have always been made of ash because of its ability to absorb shock, bend without breaking, and add heft without unwieldiness.

These uses, combined with its popularity with furniture makers, place ash among the commercial hardwood leaders.

Ash veneer

Brown ash

White ash

Wood identification

Botanically a member of the olive family, ash grows throughout the Northern Hemisphere and numbers nearly 60 species. In North America, there are 18 species of ash. However, only a few provide commercial hardwood timber.

Foremost among them is white ash *(Fraxinus americana)*, which grows from Nova Scotia and Maine west to Minnesota and south to Texas and Florida. Green ash *(Fraxinus lanceolata)* and red ash *(Fraxinus pennsylvanica)*, both smaller trees than white ash, duplicate its range and are sold under its name. Black ash *(Fraxinus nigra)*, the Indians' basket tree, is marketed as brown ash. It likes northern climes.

Oregon ash *(Fraxinus latifolia)*, grows on the Pacific Northwest coast from Washington through northern California. Equal in size to white ash, Oregon ash stands as one of the few commercial hardwoods in its region.

You can spot ash by the telltale gray bark with deep fissures in a diamond pattern. White ash, with its oval crown, may rise to 120′ in the wild. Other ash species normally approach 60′ to 80′ tall.

Ash yields straight, close-grained wood that often displays a wavy figure. Its color ranges from creamy white to tan, but brown ash, as its name implies, is distinctly darker and brown in color. For the most interesting grain and figure, brown ash gets the nod.

Dry white ash weighs about 42 lbs. per cubic foot. Brown ash is slightly lighter in weight.

Working properties

Despite ash's strength and toughness, you still can work it readily with either hand or power tools. When steam-bent, it holds its shape admirably.

The wood's close grain gives it high nail- and screw-holding power. Gluing poses no problems, nor does sanding and finishing. Ash works to a beautiful natural or stained finish. Darkened, it imitates oak.

Uses in woodworking

The same abuse-resistant properties that make ash the commercial choice for tool handles make it ideal for chairs and other furniture. Because it doesn't impart any taste, ash is also perfect for food containers and cutting boards.

And don't overlook ash when it comes to lathe work. It turns exceptionally well.

Cost and availability

You can buy ash lumber and plywood nationwide at about the same price as red oak. Brown ash, when available, costs less.

You may see Japanese ash, or *sen*, sold as plywood. It costs less than American ash, but doesn't take stain as readily.

You'll find ash veneers available both flat and quarter sawn.

Photographs: Hopkins Associates
Illustration: Steve Schindler

Print this article

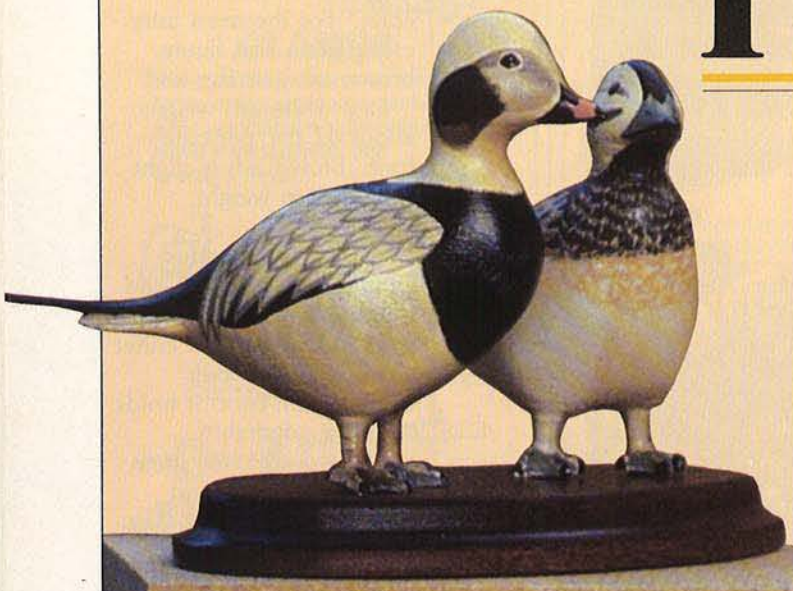
Portrait of

"I owe my father thanks for being the best teacher and dad a girl could ever want. . . . An article featuring my father and me with our hobby would be of value to many teens and parents.

Thank you for your time. I am awaiting your reply in great hopes."

Michelle Feasel

—from a letter to WOOD *dated Jan. 18, 1985*



Five years ago, Michelle, now 19, was carving lapel pins for high school friends. Now, she carves full time on a commission basis and for direct sale, traveling with her father, Bill Feasel, 40, to carving shows in the East and Midwest.

When Michelle isn't carving, she enjoys the outdoors—hunting, fishing, or hiking—with her parents, brothers, and sister near their Fremont, Ohio home.

Palm-sized miniatures of shorebirds, ducks, and geese proved salable for Michelle. They also reflected her love of the outdoors. Those shown here are displayed on blocks of jelutong.

a young carver

In the letter excerpted at left, Michelle told us about her budding career in carving. We just had to see for ourselves what she could do, and hear what she had to say about her work. What we found makes a great pitch for family woodworking, one of the themes of this issue (see pages 66–72).

"Michelle knows more about the workshop than she does the kitchen," Linda Feasel remarks about her oldest daughter. You sense Linda's pride as she continues: "Michelle is doing now what most kids never get to do, and she's accomplished it by herself."

At a stage in life when other youngsters are pondering jobs, higher education, and the future, Michelle seems to have found her way through the maze and is building a reputation as an artist with her wood carvings. She spends 40 to 60 hours each week in the workshop, and sells all she can produce.

Yet Michelle doesn't view her success as an early-arriving career, or even a job. "I look at it as a paying hobby," she says. "I still carve because I like what I'm seeing as the work progresses, and still give each piece 100 percent of my effort. I hope I never reach a point where each piece would be a duplicate of the one before. Then, that would be a *job*."

In that respect, Michelle is much like her father, Bill, a carver who tutored her about wood, tools, finishes, and other aspects of the craft. Bill describes his work as something far removed from the commercial. He's been carving and selling in the off-hours from his position with a package delivery firm for 15 years. To Bill, carving represents more of a therapeutic release than a business.

Wildlife carving comes naturally

The buck deer spied on a hunting trip, the migrating snow geese seen from a blind, the heron spooked out of a marsh, or the salmon caught on a Lake Michigan vacation all become candidates for creation on Bill and Michelle's workbench.

"We put into wood things we've seen or visualized. We both love the outdoors and want to express what we've seen in our carvings," the father says.

This expression in wood of the outdoors grew from family experience. The Feasels have always found enjoyment there.

Bill, Linda,
Michelle,

Continued

Portrait of a young carver

brothers Michael, 17, and Mark, 15, and little sister Jackie, 11, work together weekends on 17 undeveloped acres they own a few miles from Fremont. There, in a setting "almost like Canada," they put in ponds, have built a rustic cabin, and siphon water from a crystal-clear spring for their living needs. There, too, they hunt, fish, walk the forest, and wade the streams.

Carving and painting carousel animals like the 8½"high horse and pig, above, allow Michelle's creativity in form and color to flourish.

At first it was only Bill who captured the wild in his carvings, the children watching his perceptions being re-created in wood. Then the children began to carve, too. Even young Jackie found fascination in sanding the carvings her father made for her. Michelle, however, became totally involved with creating in wood.

She acquainted herself with the carving tools by straightening up her father's workbench, and with paints by washing out his brushes. Finally, she asked Bill to teach her his techniques.

To Bill, his oldest daughter's interest was simply a natural outgrowth of the family's penchant for doing things together: "Nowadays, it seems, so many families go off in different directions without any ties that bind. I think if children are to become interested in what one of the parents is doing, it'll happen *if* you have always done things together. You don't have to spark their interest—they'll manage to do it themselves."

Everybody loves a carver

Michelle's first carvings were tiny lapel pins her schoolmates ordered to wear on their blazers. They had admired some pins her father had carved, and Michelle decided to begin making them herself.

"I really started to like carving because the other kids admired my work. I could reach out and talk with them more easily when the focus was my carving," Michelle recalls of high school.

Meeting people and having something in common with them has always been a part of carving that attracts her.

When Bill traveled to Midwestern decoy shows to sell carvings and swap knowledge, he took Michelle along to broaden her interest in the art of the outdoors. "I had never seen anything like it—all the decoys, the hunting dogs, the interesting people. They accepted me and gave me attention that I wasn't used to getting from adults except my dad," says Michelle.

She was inspired, too, by the work she saw. It gave her direction. "I couldn't believe they could make decoys look so real, so close to nature. I'd walk around for hours and admire them, and wish I could do as well," Michelle remembers.

At one show, a carver encouraged her to do miniature shorebirds. They were a simple start for salable work, something to build on.

Give and take: How father and daughter work together

Once Bill discovered his daughter's interest in carving was serious, he spent more and more time helping her. As her expertise grew, her own ideas flowered.

"We see things differently at times," Michelle explains, "as any two artists would. I have to make him understand occasionally how I see something. If it differs from his view, it pulls us apart temporarily from what we do together."

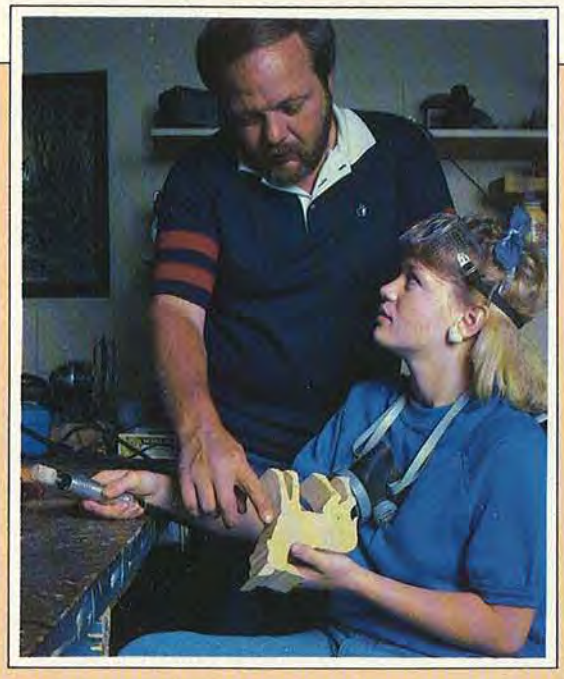
Despite the differences, sharing work space also fosters the sharing of new directions, as with the colorful carousel animals Michelle now focuses on.

Michelle's history teacher suggested she carve and paint a tiny carousel animal to fit a miniature carousel replica he owned. While she had never carved anything with four legs before, she liked the idea, and asked her father for help.

The first figure, a horse, stood 6" high, and was a hit right off. It resulted in orders for a giraffe and a zebra. They sold for $35 each. Carousel animals were a delightful, enchanting departure for both father and daughter.

"There's something about carousel music and the larger-than-life impressions of riding a carousel animal that stick with you all your life," says Michelle. "The animals allow me to be very creative. With wildfowl, fish, and game animals, you have to stick to the shapes and colors nature provided. And you can never carve and paint a piece better than God made it in the first place. With carousel animals, you have freedom."

Buyers also like the fantasy. A horse, similar to the one shown above, sold recently for $875.



Bill Feasel shows his daughter where he thinks she should remove more wood with the power carver in her hand.

Learning to use the tools of the carving trade

Michelle thinks nothing of cutting 2" stock to pattern on the band saw, a task she once feared.

Bill works nights, and wasn't always around when Michelle needed stock cut. So he taught her how to use the saw safely.

"Dad didn't want to take the chance of my cutting a finger, but I told him I'd accept all the blame if anything happened. Learning how to use the band saw was something I needed to do, and he understood."

There was a whole lot to learn. Bill taught her how to use the power carving tools to remove wood fast when roughing the patterned stock to shape. The palm gouges and knives, for cutting details, came next.

Both prefer X-acto knives over the traditional carving knife. "I don't have the patience to put a real fine edge on a knife," Bill admits, "with these you change blades."

Texturing in the feathers on wildfowl or duplicating scales on game fish carvings requires a woodburning tool. The Feasels make the red-hot tip from soft metal, bending it to the shape they want to burn into the wood. A small, three-quarter circle of metal becomes a fish scale, to be embossed on the carving hundreds of times before it's painted.

Michelle's life-size peregrine falcon

For carvings requiring lots of burned-in detail, Bill and Michelle like *jelutong*, which comes from Indonesia. Most of their carvings, however, begin as high grade, C-Select pine. They've also experimented a little with *tupelo*, which grows in the southern U.S.

Acrylic colors add life to the wood

For lifelike finishes on their carvings, both father and daughter apply acrylics, despite doubts about how long the colors will last.

"Acrylics haven't been around long enough to judge how good they'll look over the long haul," says Bill. "You can still see the rich colors on signs that were painted with oils a hundred years ago, but we don't yet know how long acrylics hold up."

Michelle admits that she uses acrylics simply because they dry faster. "When you're trying to keep up with orders, that really counts."

To get a shiny surface, Michelle sprays lacquer or varnish over the acrylic paint, as with her carousel animals. For a dull, soft finish, like a duck or kingfisher might have on their feathers, she adds a clear matte sealer, which also protects the paint from oily fingers.

When Michelle and her father start painting for a carving show and sale, they move up to the kitchen. Taking up all available countertop space, they spread duck carvings, fish plaques, and carousel animals everywhere to take advantage of the natural light that floods the counters. Linda says it looks like a "decoy factory."

The life of a full-time carver

Michelle believes her carving gives her a jump on an art career that's as yet still undefined. "I know I'll do something in the art field, but it may be fashion design or something else really different. Right now I'm still thinking about it," she says.

At present, Michelle's long hours fulfilling orders and stockpiling for future carving shows at times causes her to reflect on whether or not she really wants to continue carving on a money-making basis.

"I worry that if I turn carving into a career, and keep at it, I'll eventually burn out. Carving is lonely. But I think about the people I'll meet and the friends at shows that I'll see again. And when I'm sitting there in the workshop I don't even think if it's worth it. I just enjoy," Michelle says.

No matter what the young carver may do in the future, she knows she'll never give up carving. When that future eventually includes her own family, she wants to be able to share carving with them. "My dad has shared so many things with me, I want to do the same with my children."

Produced by Peter J. Stephano
Photographs: Jim Elder

Print this article

Applying Plastic Laminates

How to Get the Job Done Right

Do "self-respecting woodworkers" use plastic laminates? You bet they do! It's never going to replace wood as the material of choice among woodworkers, but we think you'll find it an interesting surfacing option for certain projects. And, boy, is it fun to work with!

We've divided this article into two parts. "The Basics" will serve as a refresher for those of you who have some experience with plastic laminate already (and as an introduction for those who don't). In "Nifty Solutions for Special Situations," we deal with some situations and some new materials you may not have encountered yet.

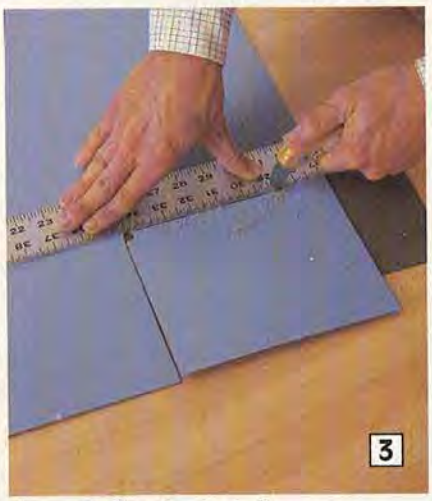
Photographs: Bob Calmer
Illustration: Advertising Art Studios Inc.

With today's new solid-color surfacing materials, you can create an array of striking edging treatments. Here we combined a walnut banding with Formica-brand "pale gold" solid-color surfacing material, then routed a cove along the top edge.

The Basics

2 GOOD WAYS TO CUT LAMINATE DOWN TO SIZE

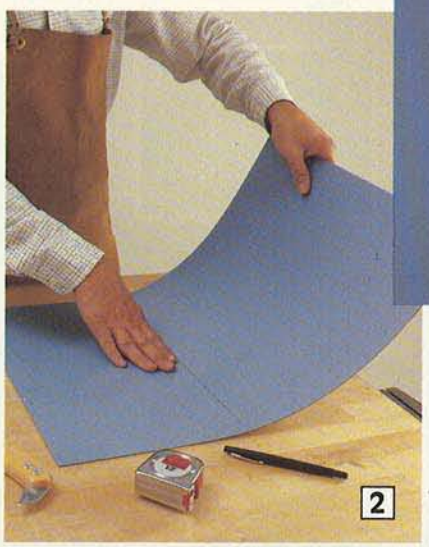
1 The score-and-snap method of cutting laminate works well with all standard laminates, but not with the new solid-core surfacing materials. Start by laying the laminate face up on a clean surface. Then mark the cutoff lines, allowing at least ½" in both directions for overhang. Put a piece of thin scrap beneath the cutoff line, locate the straightedge so that it protects the panel you'll be using, then score along a straightedge several times with a sharp-pointed tool. We use an inexpensive carbide-tipped scoring tool we bought at a local floor-covering tool supplier. When you see the dark backing showing through the color layer the entire length of the cutoff line, you're there.

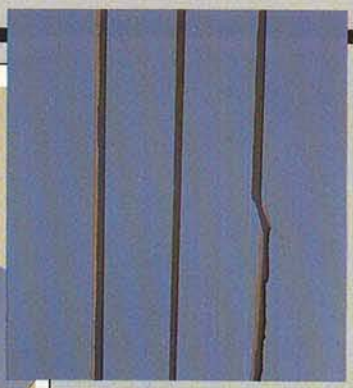


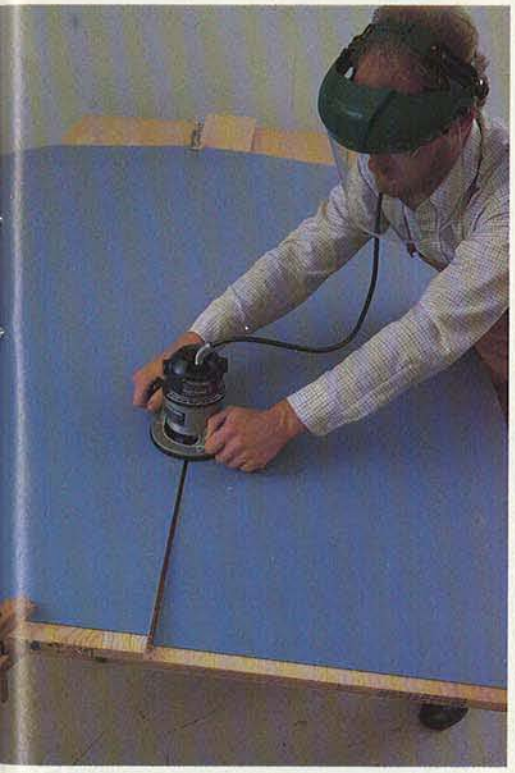
2 With your hands positioned as shown and with the laminate face up, lift up on one end of the laminate, exerting pressure until the material snaps. The photo inset shows what happens at the score line (a) if you press down on the laminate rather than lift up; (b) if you do as we suggest; and (c) if you don't score the laminate completely.

3 In situations where you need to cut the laminate in two or more directions, lay out and mark the cutoff lines, then drill a small hole in the scrap portion where the cutoff lines intersect. Doing this prevents you from accidentally scoring too far and also lessens the chance of stress cracks developing at the corner. Score completely through the shortest dimension, then score and snap along the other.

4 We've also had good luck cutting laminate with a router fitted with a flush trimmer bit. Just mark your cutoff line, clamp a straightedge beneath the laminate, and run the router along the straightedge. You'll get a super-smooth cut.







Continued

PREPARING THE SURFACE FOR PLASTIC LAMINATE

We've used both good-quality plywood and particleboard as a substrate for laminate. Regardless of which material you use, though, fill surface voids before applying the laminate. Also true up the edges and fill voids with wood putty.

The photo, *above*, shows the setup we use to guarantee a smooth edge. This technique comes in handy if you plan to band the edges of a panel with wood.

When putting an edge banding on a shelf or countertop (see the photo, *below*), glue and nail the wood to the substrate, making sure the top edge of the banding is slightly higher than the substrate. Go back later and either plane or scrape the surfaces flush. Don't use a belt sander; it may gouge the surface or round over an edge.

APPLYING THE ADHESIVE AND LAMINATE

1 Because you want to minimize the visual impact of the joint lines, the sequence of application is every bit as important as the technique. As a general rule, cover the underside of a panel first, the back and side edges, the front edge, and finish with the top surface. Contact cement sets up quickly, so on all but very small projects we recommend using a narrow, short-napped roller. Give both mating surfaces one liberal coat of contact cement (use only the non-flammable type), then allow the adhesive to dry. How do you know when the surfaces are ready for contact? Give them the touch test! If the adhesive sticks to your finger when you touch it, it's not ready.

2 To keep from mispositioning the laminate on the substrate, we lay venetian blind slats between the substrate and the laminate. Once we have laid the laminate into position and have checked to make sure we have excess to trim off on all edges, we withdraw the slats one at a time. Smooth the laminate with one hand as you work toward the other end.

3 If for some reason you goof, we've found that you can retrieve laminate even if it's already made contact. With a spray bottle partially full of contact cement solvent, dust a fine mist of solvent along the edge. Then, lift up the edge with a putty knife. Continue spraying and lifting, and the substrate and laminate will part company. Allow the solvent to evaporate, recoat both the laminate and substrate, and relay the laminate.

4 After the substrate and laminate make contact, you want to ensure a good bond between the two. Though you can accomplish this by tapping the entire surface with a scrap block and hammer, we use a rubber J-roller. With it, we can apply a lot of pressure, and we also avoid the problem of fracturing the laminate at the edges, which is a possibility with the other method.

TRIMMING AND FINISHING OFF THE EDGES

We've trimmed laminate with carbide-tipped flush-trimming router bits with ball-bearing pilots, but we can honestly say that a much less expensive solid-carbide bit with a solid pilot works just as well for us. And that's the opinion of some professionals we've talked to as well. With either type bit, you've got to be on guard against burning or scratching adjoining surfaces. We've found the two best strategies here are to keep the router moving and to apply a layer of petroleum jelly to the surface that the bearing guides against before routing off the excess. Theoretically, a router bit with a ball-bearing guide should prevent mishaps. But as you trim an edge, for example, the contact cement builds up and restricts the movement of the bearing.

Trimming laminates with a flush-trimming bit results in a sharp, square edge. For safety's sake, dress the edge with a single-cut file as shown, *below*. Hold the file so that the edge will be beveled slightly, and move the file across the edge lightly several times.

MORE TIPS ON WORKING WITH LAMINATES

- Before working with plastic laminate or the new solid-color surfacing materials, allow a day or so for the material to acclimate. Also make sure that the contact cement is at room temperature before applying it.
- Be *extra* careful when handling and working the solid-color surfacing materials. They're even more brittle than standard laminates. They also have the habit of chipping when being cut, so use sharp, carbide-tipped cutters when cutting or shaping them. And if you glue several layers of these materials together to create decorative edge treatments, be sure to scuff up the face of the layers to which other material will be applied to ensure a good bond.
- If you apply laminate to any surface that won't be anchored securely to another assembly, always apply laminate, or the less-expensive "backing sheet," to the back side of the panel to minimize the chances of warping due to moisture.
- Always work in a well-ventilated area when applying contact cement, as its vapors can be dizzying if inhaled for too long a period. And don't work around heat or flames.
- Sometimes air bubbles form between the laminate and the substrate after application and cause the bond to break. (Usually the cause of this is laying down the laminate before the cement has "flashed off.") To correct this situation, lay a damp cloth over the area in question, then place an iron set at the cotton setting onto the cloth. Doing this reactivates the cement and allows you to press the laminate and substrate together.
- To help prevent stress cracks at inside corners, hold the contact cement back about 6" in all directions from the corner, then apply white glue to both surfaces and clamp them together.
- To keep the contact cement applicator relatively pliable between coats, wrap it in plastic to keep the solvent from escaping.

Continued

Nifty Solutions for Special Situations

WRAPPING LAMINATE AROUND CORNERS

Ever wonder if you could wrap plastic laminate around a relatively tight radius? We were curious to find out, so one of the staffers brought in a blow dryer to see if we could do a little coaxing by heating the laminate. Nothing doing; it didn't heat the laminate to the 313° temperature that postforming manuals specify as the correct laminate bending temperature. So we got hold of a commercial heat gun at a local rental outlet. With it, we formed the laminate around radii down to about 1". We bent the laminate first, then applied contact cement.

ALIGNING GEOMETRIC-PATTERNED LAMINATES

One of the new-generation "designer" laminates, the geometrics can cause you headaches if you're not careful. To make them look good, the surfaces you adhere them to must be square. This, combined with the fact that the patterns themselves aren't always true, makes aligning these laminates difficult. To make things easier on ourselves, we cut four like-sized wood scraps, and use them as shown. We make any needed adjustments, then apply contact cement to both of the surfaces and then lower the laminate down onto the substrate.

PICTURE-PERFECT JOINT LINES

When you want a perfect joint line between two pieces of laminate that butt end-to-end or edge-to-edge, try this technique: Clamp two pieces of scrap to your workbench with a small space between them, then butt the two pieces of laminate together. Now secure the pieces of laminate with two more scrap lumber cleats. One pass with your router fitted with a carbide trimming bit, and you've got it made. Hold the router against one of the guides, and don't rotate the base of the router because many bases are not perfectly round.

HIDING UNSIGHTLY SEAM LINES AND DEFECTS

What if you end up with a less-than-perfect joint line or need to repair a defect of some sort? We decided to try a product called Kampel SEAMFIL from a local laminate retailer. We color-mixed some according to the directions and forced it into a seam. It worked as advertised, although we did have quite a time getting a color match. If we used the product again, we'd pay to have the factory color-match the product for us so as to guarantee good results.

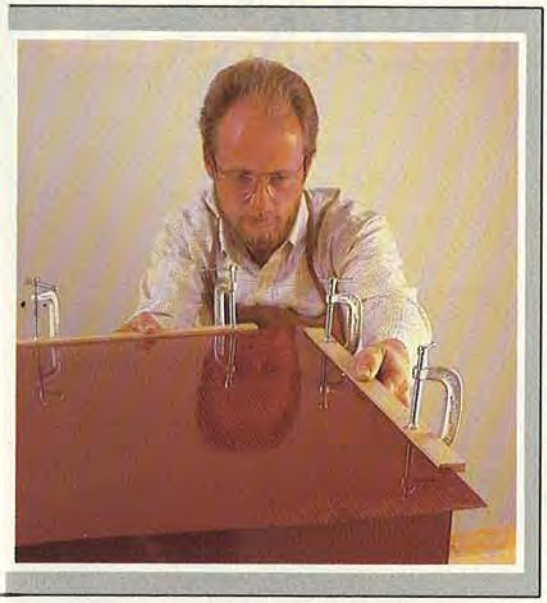
WRAPPING A CYLINDER

Start by cutting the laminate to the length and width required. Be sure to allow extra for trimming. Apply contact cement to both mating surfaces, wait until the cement is dry to the touch, and apply the laminate to the substrate, except for the last 8 to 10". Slip a piece of waxed paper beneath the laminate, then carefully mark both edges of the laminate as shown.

Carefully align one edge of a straightedge with the marks you just made, and clamp the straightedge in place as shown. Run your router along the edge.

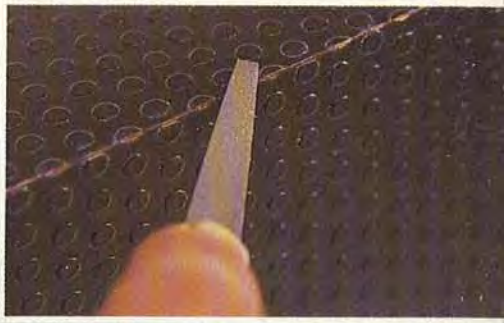
FINISH-SANDING WOODEN EDGE BANDING

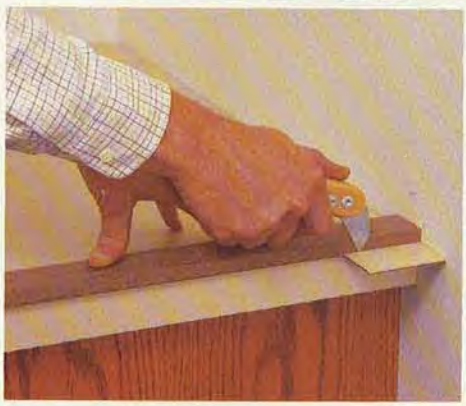
When you choose the option of dressing up the edge of a shelf or counter with a wood banding, getting the wood perfectly flush with the top of the laminate is tricky. When we apply the banding, we try to make sure the wood projects a bit above the laminate. Then we mask off the laminate and use a sanding block to bring the two surfaces flush. When we begin to see scuff marks on the masking tape, we call it quits.



DRESSING UP THE EDGES OF TEXTURED LAMINATES

You can trim the edges of textured laminates as you do other laminates, but the bearing or pilot will follow all of the depressions and other irregularities in the material along the way. We dress the edge by working a triangular file carefully as shown here. A time-consuming technique to be sure, but necessary when working with these kinds of textured patterns.





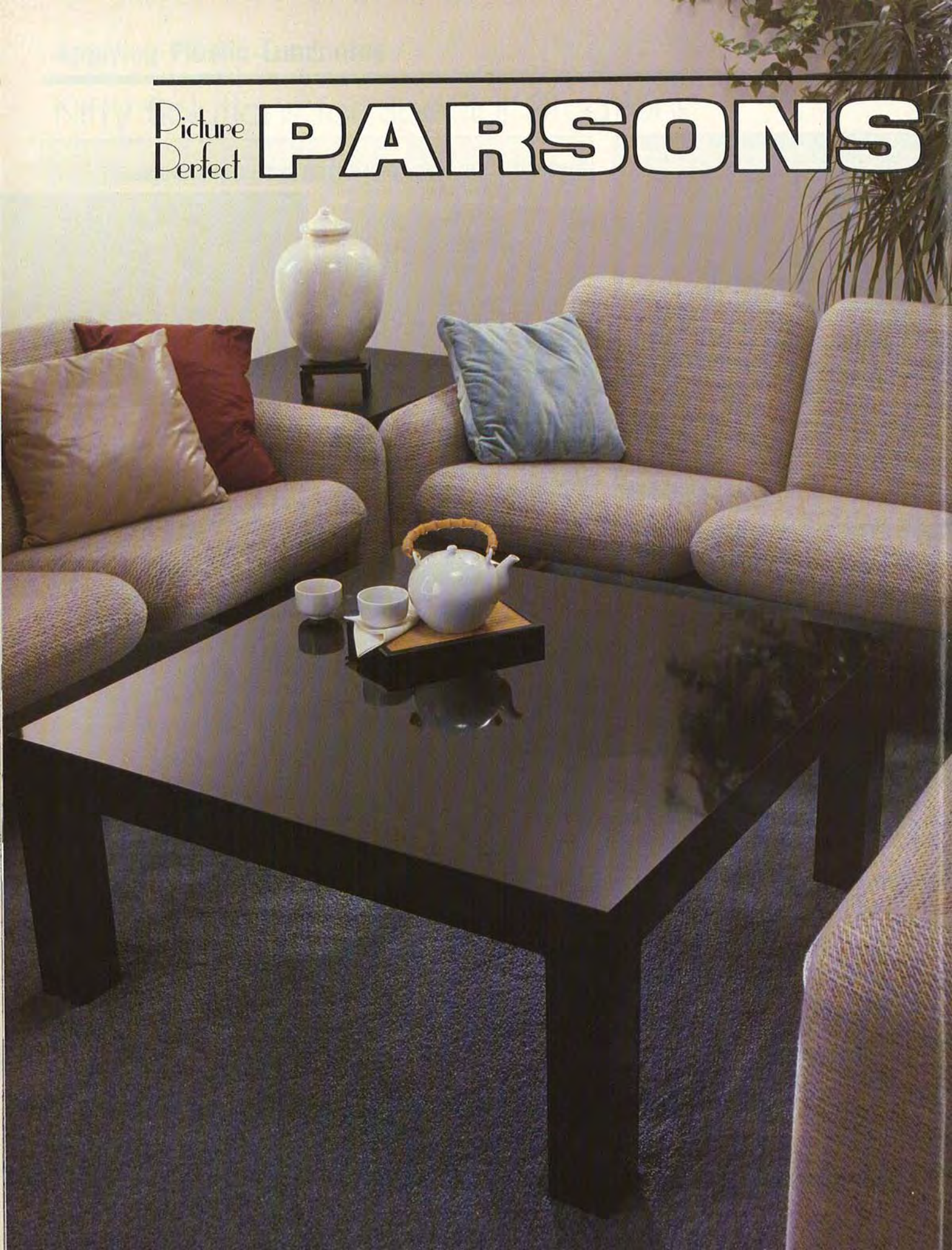
THREE COMMON COUNTERTOP PROBLEMS

Countertop installations give most people fits, mainly because the walls countertops fit up against are irregular. But scribing to fit allows you to compensate for those imperfections. In the instance shown at left, we used a thin piece of scrap material and a pencil to scribe the irregularities of both walls onto the laminate.

Most laminate-trimming routers can't trim laminate right up to the wall. To trim the remainder of the excess material, we guide our scoring tool along a straightedge several times until we work our way through the material. The we put the finishing touches on with a file.

Here's a tip for those situations when you install a sink in a countertop. We mark the cutoff lines, then bore a ½" hole in each corner of the cutout. These holes do two things. First, they provide a radius at each inside corner, which helps to prevent stress cracking. And they also prevent you from accidentally scoring surrounding laminate. We score along each of the cutoff lines, then use a jigsaw with a metal-cutting blade to cut out the top. (This blade reduces chip-out.)

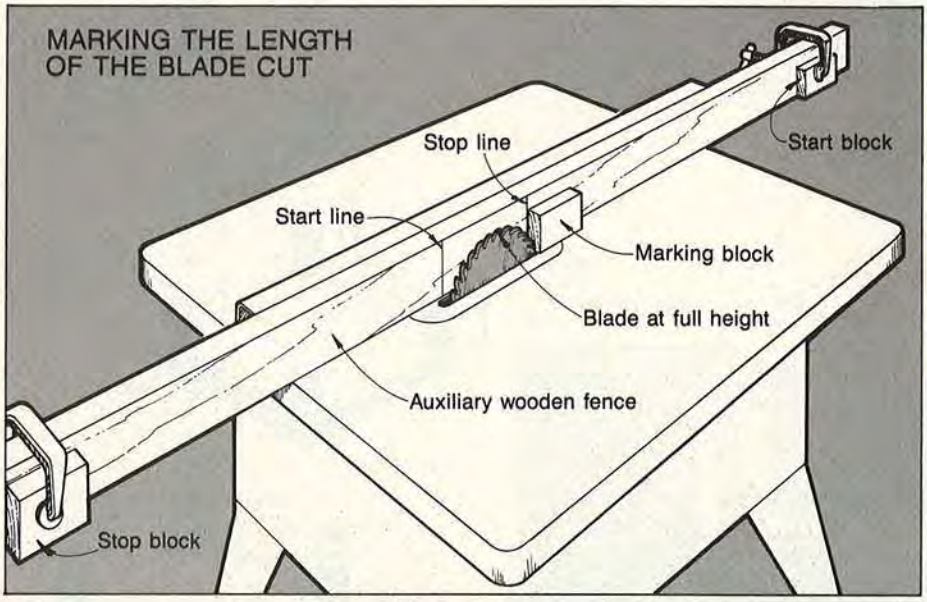
For more information on what's available in plastic laminates, how they're sold, and where to purchase them, please turn to the article on page 76.

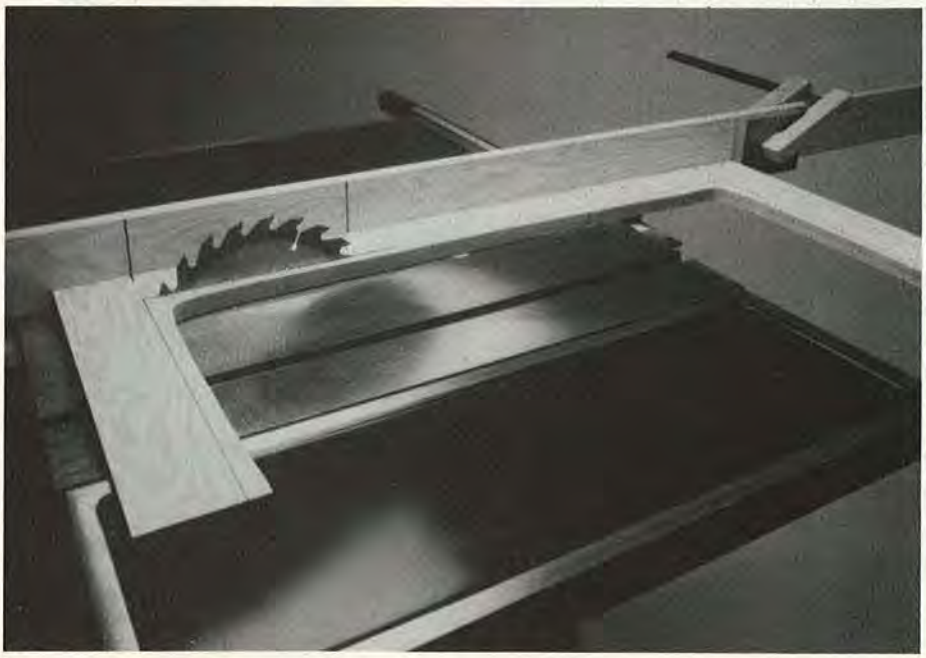

Picture
Perfect
PARSONS

Print this article

TABLE

A single sheet of ¾" plywood and another of high-gloss laminate join forces in this easy-as-pie project. The finished product measures 36" square and 17" high—ideal for a conversation grouping like this one. Or, adapt our dimensions to suit your specific requirements. If you want another color or finish, today's selection of laminates gives you choices galore. For two other laminate project ideas using the same construction techniques, see page 87 of this issue.





BUILDING THE PLYWOOD FRAME

1 Lay out all the parts of the frame on the face side of the plywood, as shown in the Cutting Diagram. Then, with a table saw (and helper if you can find one), cut the top (A) to size.

2 Using the Cutting Diagram as reference, rough-cut the table legs (B, C) with a jigsaw. Then trim the exterior edges and the leg bottoms with the table saw.

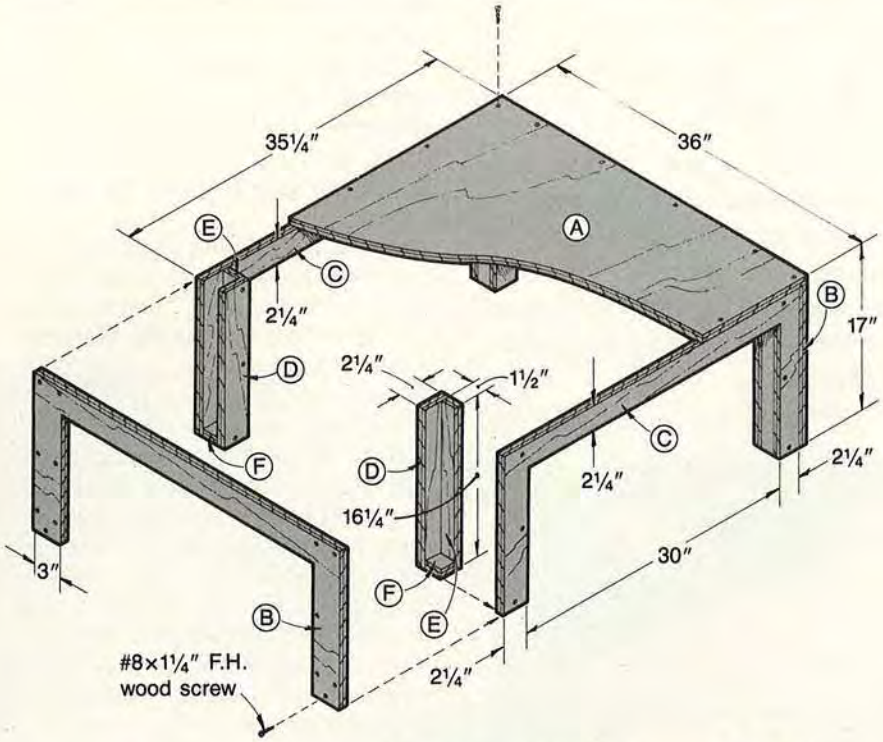
3 To make the interior cuts on B and C easier to cut perfectly straight, attach a long wooden auxiliary fence to your table saw fence. Unplug the table saw, raise the blade to its full height, and position the fence against the blade. Slide a piece of wood along the fence until it comes into contact with the blade, and mark the maximum length of the blade cut on the wooden fence, as shown in the drawing, *left*. Extend these lines up the side of the wooden fence so that they will be visible when you cut the plywood.

4 Using a straightedge, mark start and stop lines on each A and B, as shown in the Cutting Diagram. Now, move the table saw fence 2¼" away from the inside edge of the blade. Lower the blade below the surface of the table, and set one of the B legs on the surface of the saw. Line up the start and stop lines on B with those on the wooden fence, and clamp start and stop blocks to the fence at those points (see the photo, *left*).

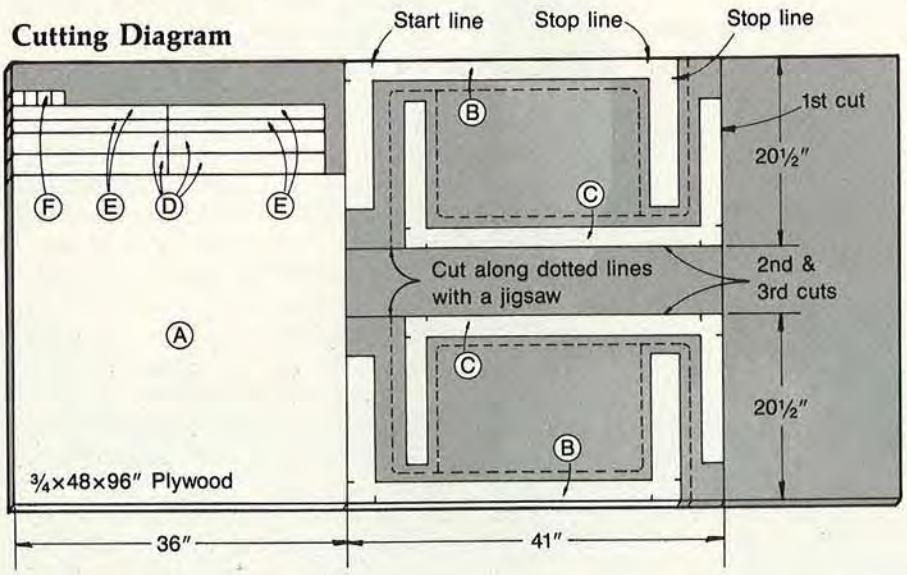
5 With one of the Bs against the auxiliary fence and the start block, plug the table saw in, turn it on. Slowly raise the rotating blade up through the ¾" plywood stock until the blade is extended upward to its full cutting height. Not only is the blade at its full cutting height, it is at its full cutting length as measured in Step 3.

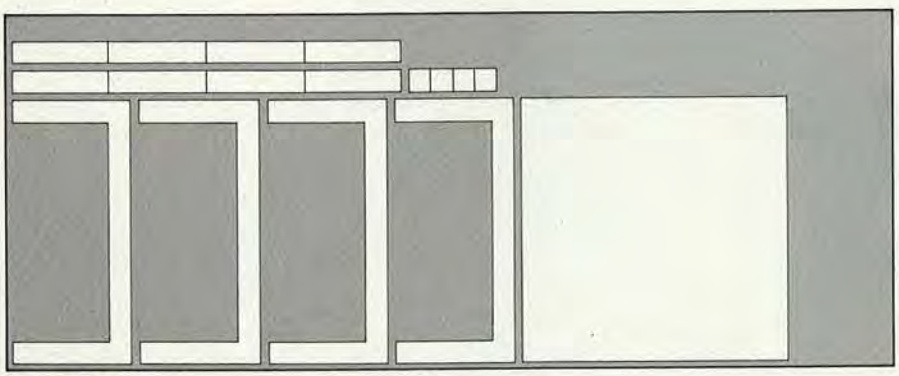
Warning: When raising the moving blade through the plywood, be sure to hold the plywood firmly against the table, but do not put your hand near the area where the blade will protrude!

Continued



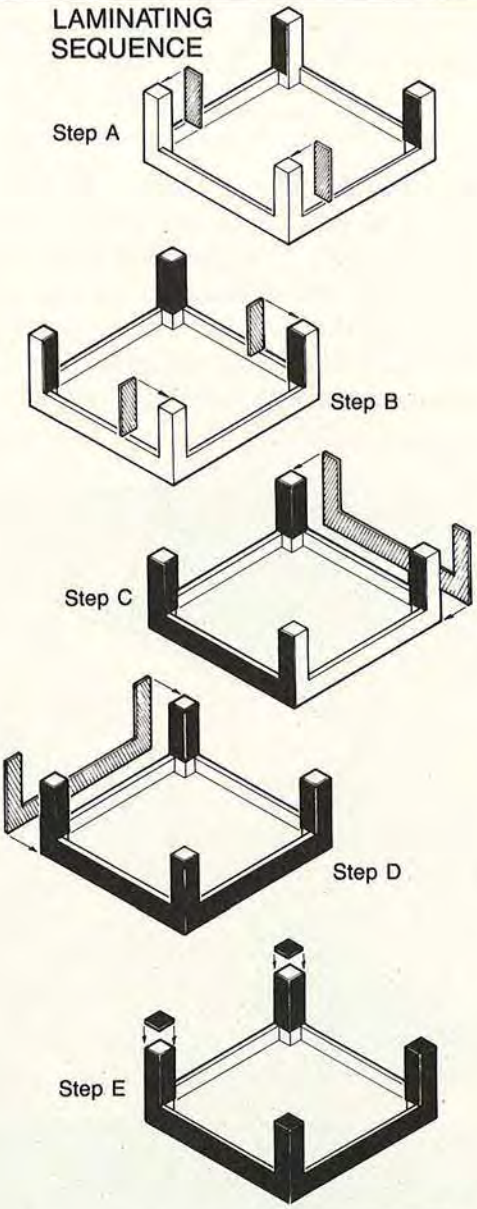
Cutting Diagram





48×120" Laminate

LAMINATING SEQUENCE



Bill of Materials

Part	Finished Size*			Material	Qty.
	T	W	L		
A	¾"	36"	36"	plywood	1
B*	¾"	16¼"	36"	plywood	2
C*	¾"	16¼"	34½"	plywood	2
D	¾"	2¼"	16¼"	plywood	4
E	¾"	1½"	16¼"	plywood	4
F	¾"	1½"	1½"	plywood	4

*These parts are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: #8×1¼" flathead wood screws, wood filler, contact cement, plastic laminate, black paint, petroleum jelly, permanent black felt-tipped marker

6 Push the leg along the fence until you meet the stop block at the other end of the fence (see the photo, *right*). Holding B in place, shut off the saw and wait until it comes to a complete stop before removing the piece. Lower the blade, place the other B in position, raise the blade through it, and cut it in the same manner. To cut the C legs (they are ¾" narrower), you will need to move each stop block toward the center by ¾".

7 To make the cuts along the legs of B, move the fence 3" from the inside edge of the blade. Position a stop block on the fence, and cut both inside cuts on each B as shown in the drawing, *right*. Move the fence 2¼" from the blade, and make both cuts on the inside edge of each C using the same stop block. You will need to use a handsaw to square up the cuts, as the blade leaves an arc shaped cut.

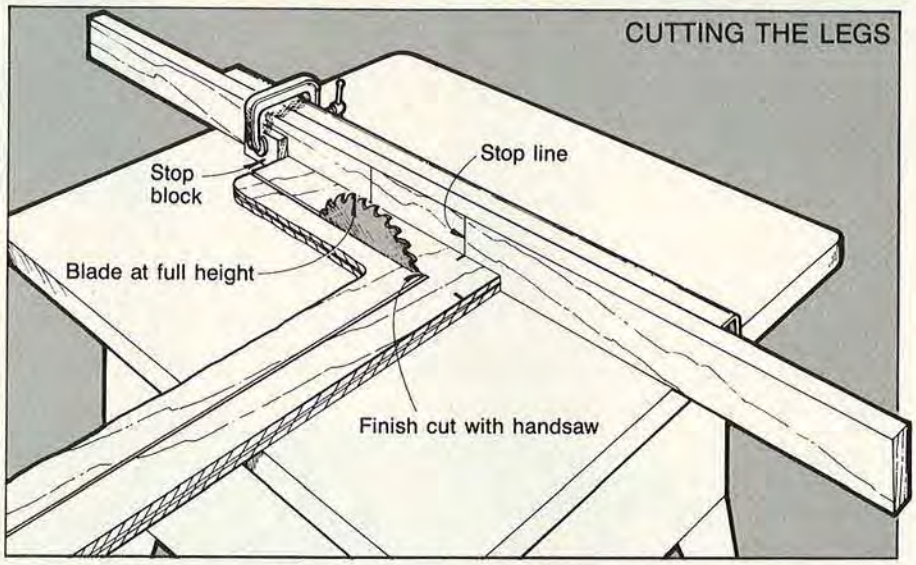
8 Dry-clamp the leg assemblies (B–C) together, and check for a proper fit of all the parts. Trim if necessary. Then, glue and clamp the leg assemblies together, checking for square. Be careful not to round-over or dent the square edges when clamping. To reinforce the joints, drill pilot holes and drive #8 × 1¼" flathead wood screws where shown in the Exploded-View Drawing. Make sure the head of each screw rests flush with the surface of the plywood (otherwise they will show through when you apply the laminate).

9 Glue and clamp the tabletop onto the leg assembly, and secure it with screws.

10 Cut the plywood parts D, E, and F to the sizes given in the Bill of Materials for the inner legs. Glue up one D, one E, and one F for each inner leg. Secure the pieces together with #8 × 1¼" flathead wood screws.

11 Glue and screw the inner-leg assemblies to the table assembly to form the completed carcass.

12 After the glue dries, fill *all* voids and holes with filler. Sand the carcass assembly smooth, being extremely careful not to round-over any edges.



APPLYING THE LAMINATE

Note: If you don't have any experience with applying plastic laminate, or you're a little rusty, read the preceding techniques article, "Applying Plastic Laminate," for some helpful hints.

1 Using the Laminating Sequence Drawing as a guide, cut and apply laminate to the inner edges of each leg (see Steps A and B).

2 Lower the table onto the face side of the laminate, and trace the outline of the legs and tabletop with a colored grease pencil. Allow at least ½" in all directions when cutting for overlap, as it will be trimmed with a router later. Apply the laminate to the plywood legs as shown in Steps C and D, then to the tabletop, and then to the bottom of the legs (Step E). Trim after each step with a router fitted with a flush-cutting bit. (We rubbed petroleum jelly along the path of the bit's pilot to prevent it from marring the already-applied laminate. The pilot may clog with glue and burn the laminate.)

3 To minimize the seam lines of the laminate, "stain" the exposed laminate edges with a permanent black felt-tipped marker. Wipe off the excess with a clean rag.

4 Mask off the laminate and paint the remaining exposed plywood on the bottom side of the table black.

Buying Guide

● ***Plastic laminate.*** 4 × 10' sheet Nevamar Black S-6-1G "Glossie" Finish. For the distributor nearest you, write Nevamar Corp., 8339 Telegraph Rd., Odenton, MD 21113, or call Nevamar at 301-569-5000 and ask for ext. 394 (customer service).

Project Design: James Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

PLEASE

This chair complements the oak dining table that appeared in the February, 1986 issue of *WOOD* (page 64).

BE SEATED!

Solid Oak Dining Chair

Print this article

No woodworking project demands more attention to snug joinery and properly scaled dimensions than a chair. We've taken special pains to ensure that this sturdy oak dining chair will remain comfortable and eye-pleasing for years to come.

Note: The instructions explain how to make one chair, and the Bill of Materials gives the number of pieces required for one chair. You will need to determine how many chairs you want, then cut and machine as many parts as necessary. When making four or six chairs, cut all identical pieces at the same time. We tried upholstering our own chairs with mixed results; you may be better off having a professional do the upholstering for you.

FORMING THE LEGS

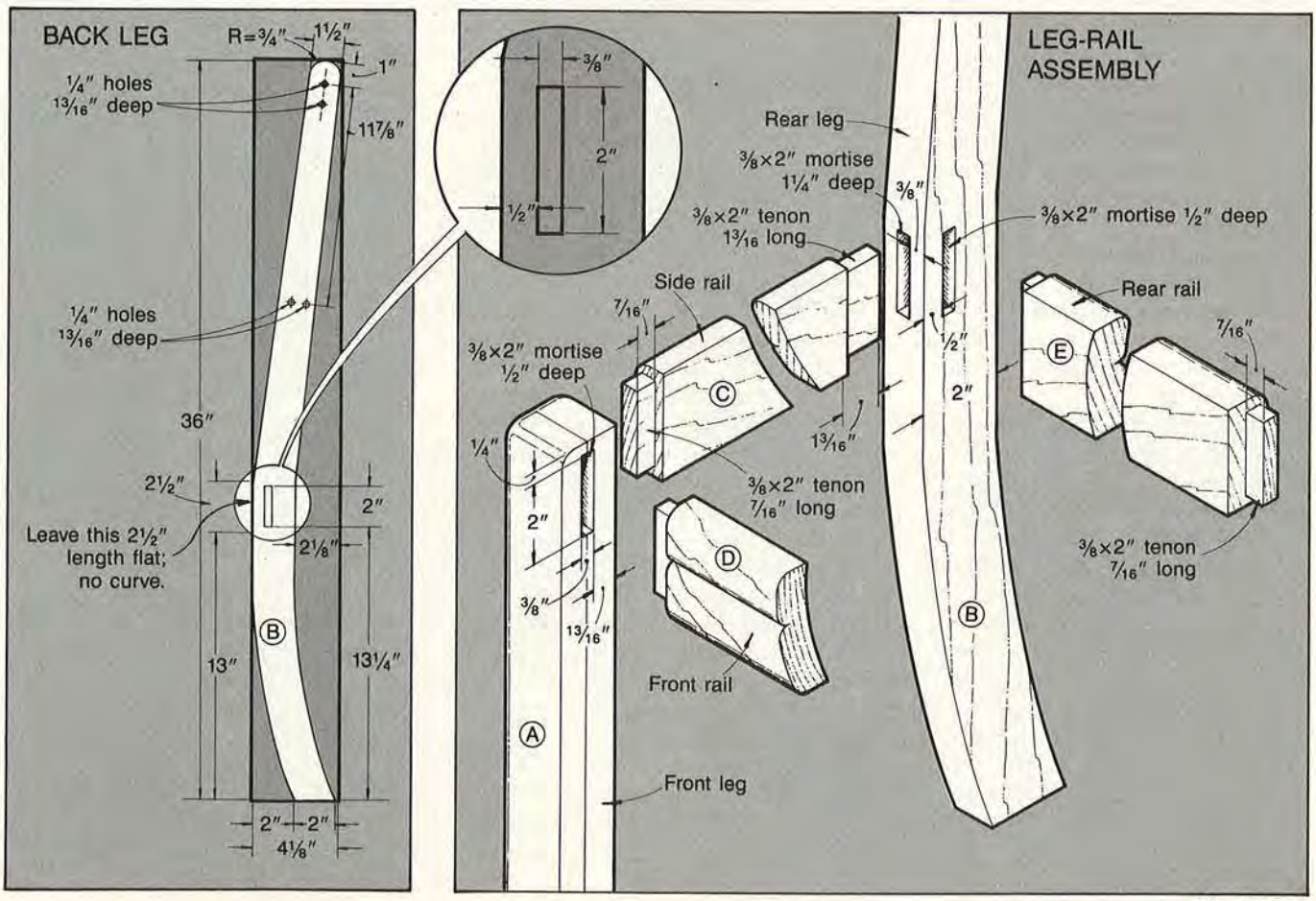
1 Cut the front legs (A) to size. (You can use 1½" stock or laminate two ¾" pieces together.)

2 To make the back legs (B), start by cutting two 1 1/16"-thick pieces 4⅛" wide by 36" long. Using the drawing shown *below*, lay out and mark the shape of just *one* of the back legs. With a helper, use a flexible thin strip of wood to mark the curved lines.

3 Lay out and mark the position of the mortises on the front and back legs as dimensioned in the Leg-Rail Assembly Drawing, *below*, and as shown in the Back/Leg Drawing.

Note: Remember that you are working in pairs (pairs of front legs and pairs of back legs). You'll want to mark the mortises on each pair before cutting to ensure that you machine the correct side of each part. (We marked one right leg and one left leg and used these as templates to mark the rest of the legs.) We also taped the pairs together after each marking and machining procedure.

4 To form the mortises in the front legs, use a drill press with a ⅜" flat-bottomed bit, and drill out the stock within the marked mortise lines ½" deep, as shown in photo A, p. 43. You can drill one of the



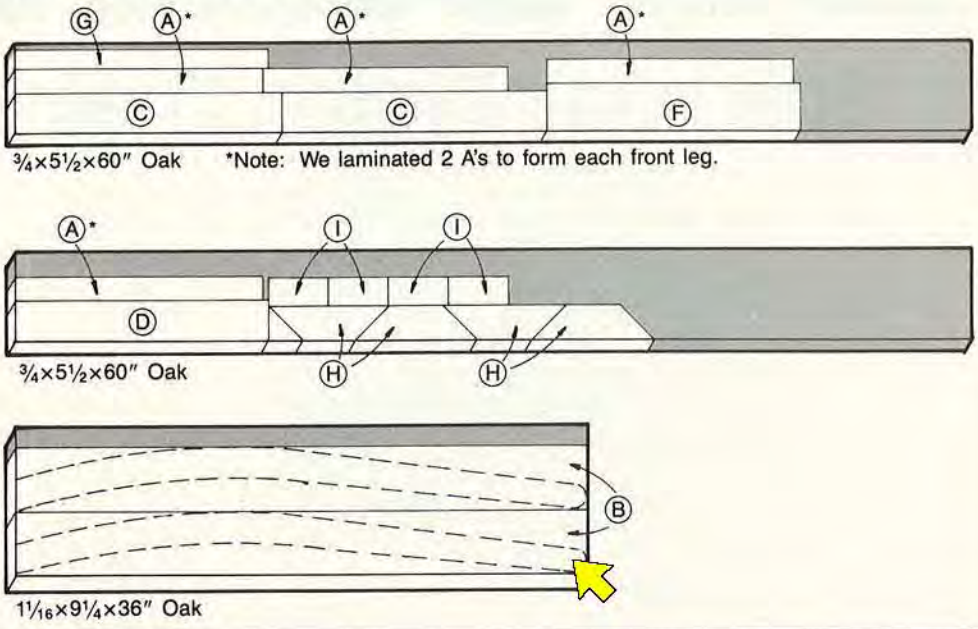
Continued

Bill of Materials
For One Chair

Part	Finished Size T	W	L	Material	Qty.
A	1½"	1½"	15½"	oak	2
B	1 1/16"	4⅛"	36"	oak	2
C	¾"	2½"	16⅛"	oak	2
D	¾"	2½"	15⅞"	oak	1
E	1 1/16"	2½"	16¾"	oak	1
F	¾"	3"	15⅞"	oak	1
G	¾"	1¼"	15⅞"	oak	1
H	¾"	2⅛"	7½"	oak	4
I	¾"	1¾"	3¾"	oak	4
J	½"	16"	17"	plywood	1
K	¼"	15¾"	10¾"	hardboard	1
L	½"	½"	9¾"	pine	2

Supplies: #8×1" flathead wood screws, #8×1½" flathead wood screws, ¼×1½" dowel pins, ½" foam padding, fabric, Stanley 1" corner braces (no. CD997), staples.

Cutting Diagram for One Chair



mortises in each front leg with the setup shown. You must then move and reclamp the stop block to the other side of the bit, and drill the other mortises in each leg. Marking the mortise locations earlier sure prevents confusion here! We used a back fence and stop to ensure that all the mortises were consistent in size and location. And we set the stop on the drill press to make sure that all holes were drilled to the same depth.)

5 Drill the mortises in the front of the back legs the same way the front ones were drilled. However, note that you will need to construct a longer fence with stops for your drill press table.

6 Using a double fence (shown in photo B) on the router table to ensure a perfectly straight routed groove, and a ⅜" straight bit, rout the mortises clean in each front leg as shown in the photo. Use a stop to ensure a consistent mortise length. You'll be able to rout one mortise on each leg front with the setup shown. Move and reclamp the stop block to the other side of the bit, and rout the other drilled mortises clean.

7 Use the same double fence on the router table and the same ⅜" bit ½" above the surface of the table. Adjust the fences and stops and rout the mortises clean (1¼" deep) in the front edge of each back leg, as shown in photo C. Make at least two passes to achieve the 1¼" depth and not strain the bit.

(As shown in the photo, we marked the length of the mortise on the side of each rear leg, and marked the location of the router bit on the front fence. The marks on the fence indicate the exact position of the ⅜" bit. This enabled us to rout the mortise to exact size, despite the fact that this is a "blind-routing" operation. Using the marks, you can eliminate the use of a long back fence and stops.) Photo D shows the routed mortise.

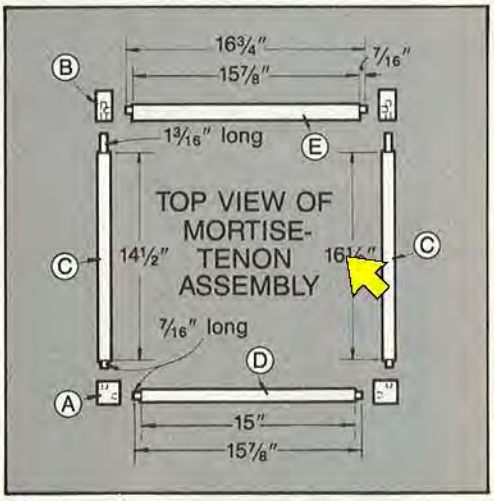
8 Drill the mortise in the inside face of each leg. Then move back to the router table, adjust the fence, stops, and depth of cut, and rout the mortises clean.

9 Use a sharp chisel and a mallet to square the rounded ends of each routed mortise.

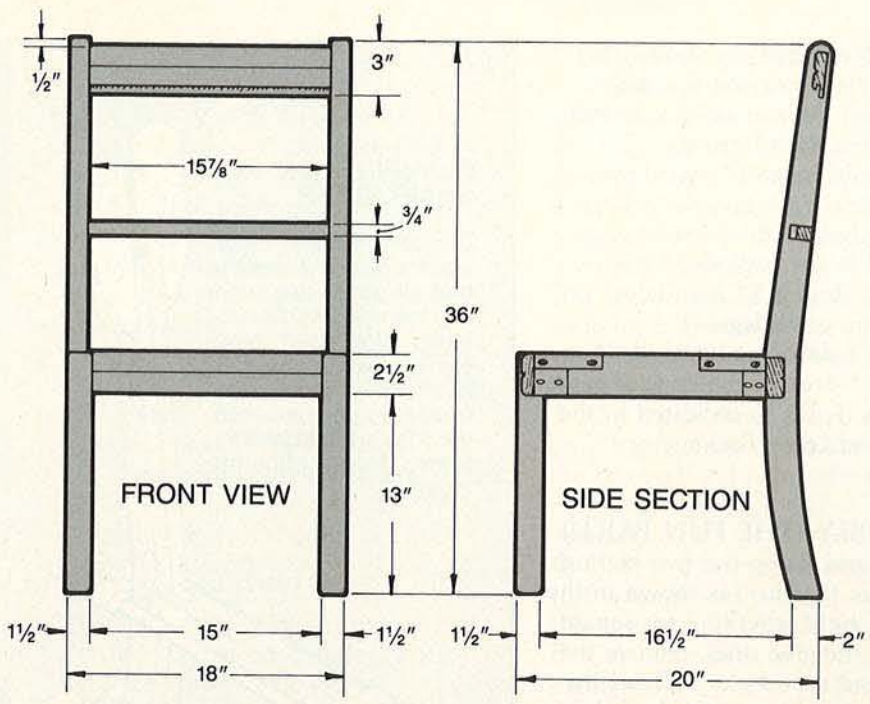
10 With a band saw, cut the previously marked back leg to shape, cutting just slightly outside the line drawn. Now, sand the leg to the marked line. Using this leg as a template, mark the shape of the other back leg. Then cut and sand it to shape. (Accurately shaping the first leg ensures a good template for tracing the other legs.)

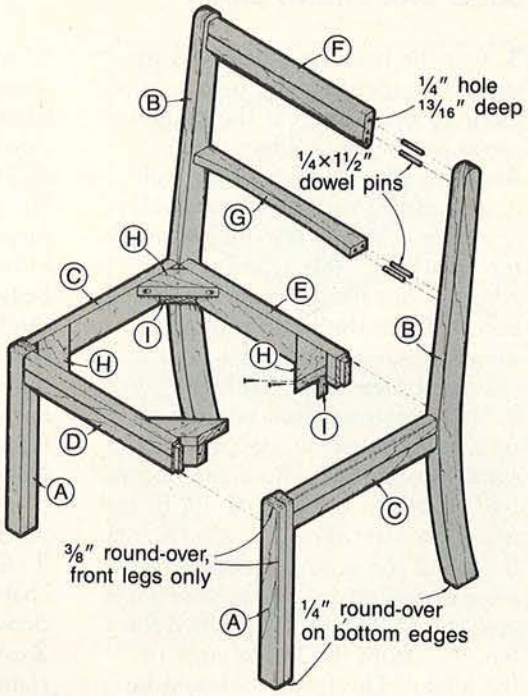
TIME TO MACHINE THE RAILS

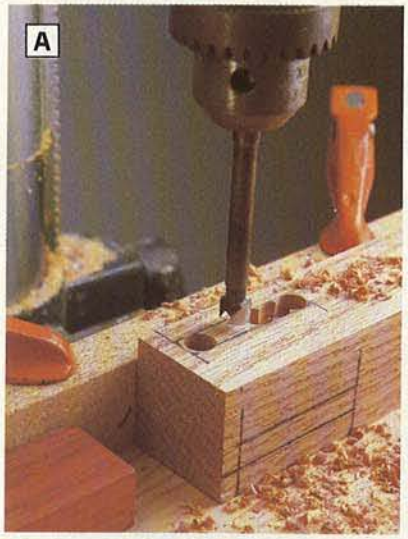
1 Rip and crosscut the side rails (C), front rail (D) and back rail (E) to size as listed in the Bill of Materials. Note that the back rail is longer than the front, as shown in the drawing, *below.*

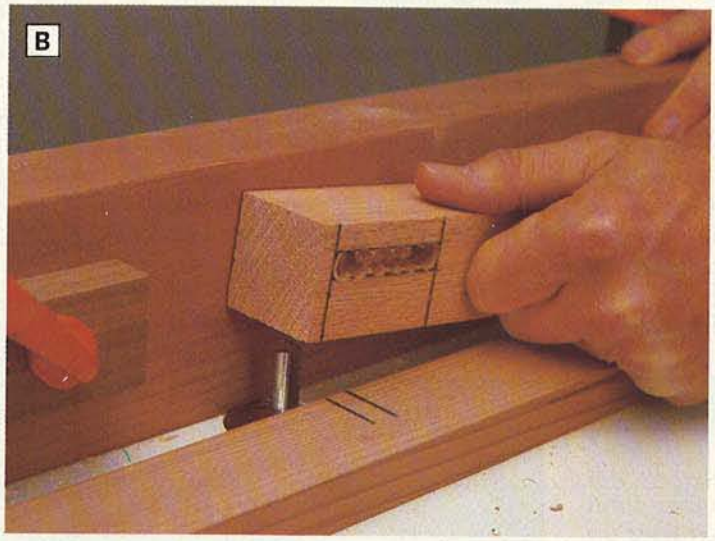


2 Cut the ends of each rail to form tenons as dimensioned in the Leg/Rail Assembly Drawing. (We did ours on the radial-arm saw using a dado blade. We cut our tenons 1/16" less than the depth of the mortise to allow for glue pocketing. We test-cut scrap material first and checked the fit of the test tenon into the mortises previously machined in the legs.)







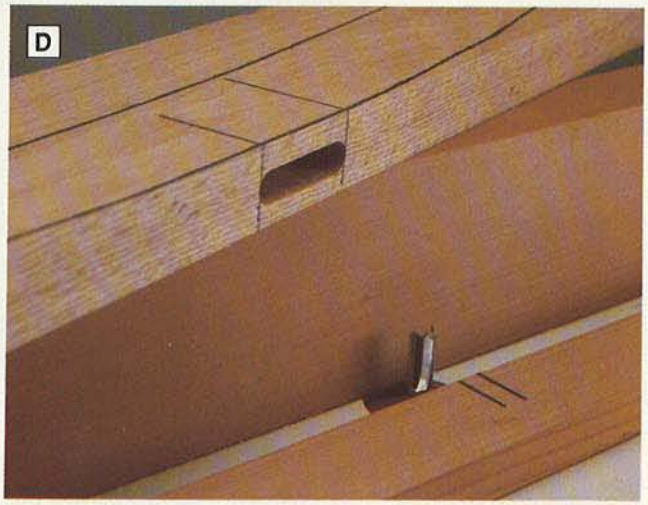


A **Drilling the Marked Mortise**

B **Routing the Front Leg Mortise**

C **Routing the Mortise in the Back Leg**

D **The Completed Back-Leg Mortise**



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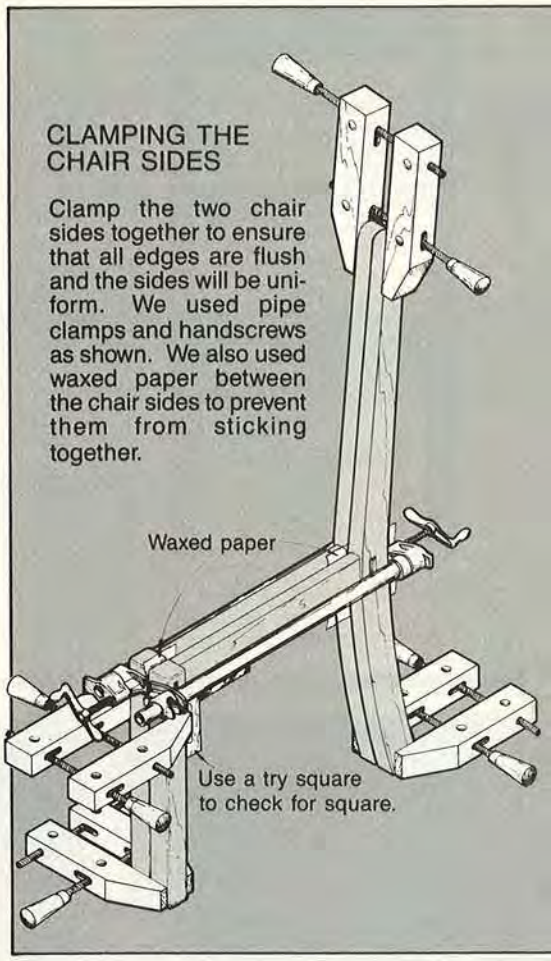
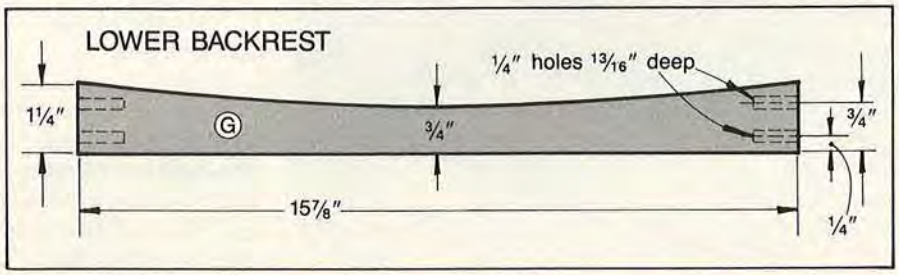
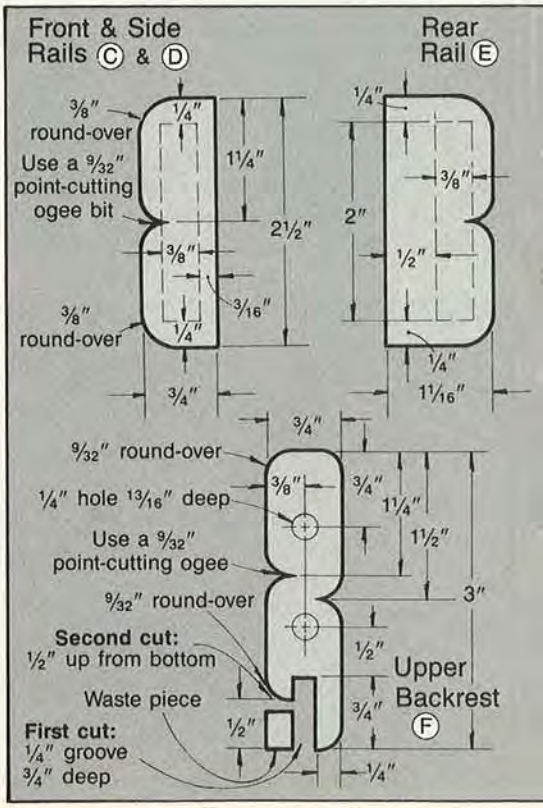
3 Cut the backrest rails (F, G) to size. (Use the drawing, *below*, as a guide to mark and cut the shallow recess on the front edge of G.)
4 Using the drawings of the rails (C, D, and E) and the upper backrest shown *below*, lay out and mark the location of the 9/32" ogee cuts. Also lay out the 1/4" groove you'll be cutting in the bottom of the upper backrest rail (F). Fit your table-mounted router with a 9/32"-point cutting ogee bit, and set up a fence to guide the cut as shown in photo E. Rout the decorative groove in the rails (C, D, E) and upper backrest (F).
5 To cut the groove in the bottom edge of F, start by fitting your table saw with a dado blade. Move the fence 1/4" from the inside edge of the blade. The first cut should be 1/4" wide by 3/4" deep along the bottom edge of F. For the second cut, switch back to a 1/8" blade set 3/8" above the surface of the table with the outside edge of the blade 1/2" from the fence.
6 To round-over the top and bottom edges of the upper backrest (F), use the point-cutting ogee and a fence on your router table. Using a 3/8" round-over bit, round-over the edges of the front and side rails (C, D), and the rear rail (E), as indicated in the Rails Drawing.
7 Using the same 3/8" round-over bit, rout the front outside and top outside edges of the front legs, as indicated in the Exploded-View Drawing. Rout a 1/4" round-over on the bottom of all legs.
8 Using a doweling jig, drill 1/4" holes 1 3/16" deep in the ends of the back rails (F, G), as indicated in the Upper- and Lower-Backrest Drawings.

ASSEMBLY (THE FUN PART!)

1 Glue and clamp the two mating chair sides together, as shown in the drawing, *right*, checking for square.
2 After the glue dries, remove the clamps and excess glue. Chisel the remaining mortises in the back legs to their original 1/2" depth. The mortises have been partially filled in by the tenon of the side rails (C).
3 Dry-clamp the front and back rails (D, E) to join the two chair sides together. Check the fit of pieces (F, G) between the back legs. (Part G should be positioned flush with the back edge of B.)


CLAMPING THE CHAIR SIDES
Clamp the two chair sides together to ensure that all edges are flush and the sides will be uniform. We used pipe clamps and handscrews as shown. We also used waxed paper between the chair sides to prevent them from sticking together.
Waxed paper
Use a try square to check for square.





4 Loosen the clamps slightly. Using ¼" dowel centers (you'll need to buy two sets of dowel centers for this project) in the ends of F, correctly position F between the back legs. Once positioned, compress the back legs together to transfer the dowel center's mark into the back legs. Repeat this process for the lower backrest (G).

5 Remove the clamps, and drill ¼" holes 13/16" deep at the marks on the back legs. A doweling jig helps ensure correct hole location.

6 Glue and insert the dowels, then glue and clamp the two chair sides together with the front and back rails (D, E), and upper-back rails (F, G). Check that the rails are square with the legs. Make sure that the chair is sitting on a perfectly flat surface while clamping.

7 Cut the corner braces (H and I) to size. (We found that a couple of corner braces didn't fit, as the chair was a bit out of square. To correct this, we cut the braces slightly larger, scribed the angles needed, then recut the pieces for an exact fit.)

8 Clamp the corner braces in position as shown in the Exploded-View Drawing. Then drill the pilot holes, and glue and screw the corner braces (H) in place. Follow the same procedure to mount the lower braces (I). Fasten H to I with a #8×1½" wood screw.

NEXT, THE CUSHIONS

1 Cut the plywood seat (J) to size. Radius the front corners, and notch the back corners, as shown in the drawing, *right*. Bore 1" vent holes through the plywood. Sand or rout a slight round-over on the top and bottom edges of the plywood.

2 Cut two pieces of ½"-thick foam padding to the same size as the plywood seat. Cover the seat (J) and foam with fabric.

3 Cut the backrest panel (K) and pine staple cleats (L) to size. Bevel the top end and radius the bottom end of each cleat as shown in the drawing, *right*.

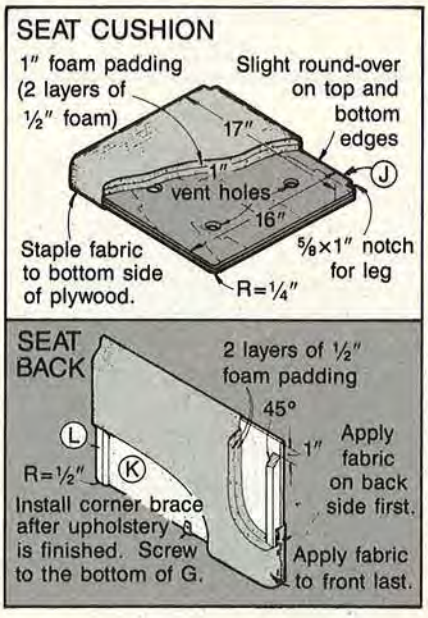
4 Glue and clamp the pine cleats to the hardboard panel flush with the bottom and outside edges.

5 Cut two pieces of ½"-thick foam padding—the first to fit between the cleats and the second to overlap the cleats. Attach the fabric to the panel and cleat assembly as shown in the Seat-Back Drawing.

YOU'RE ALMOST THERE! FINISHING AND FINAL ASSEMBLY

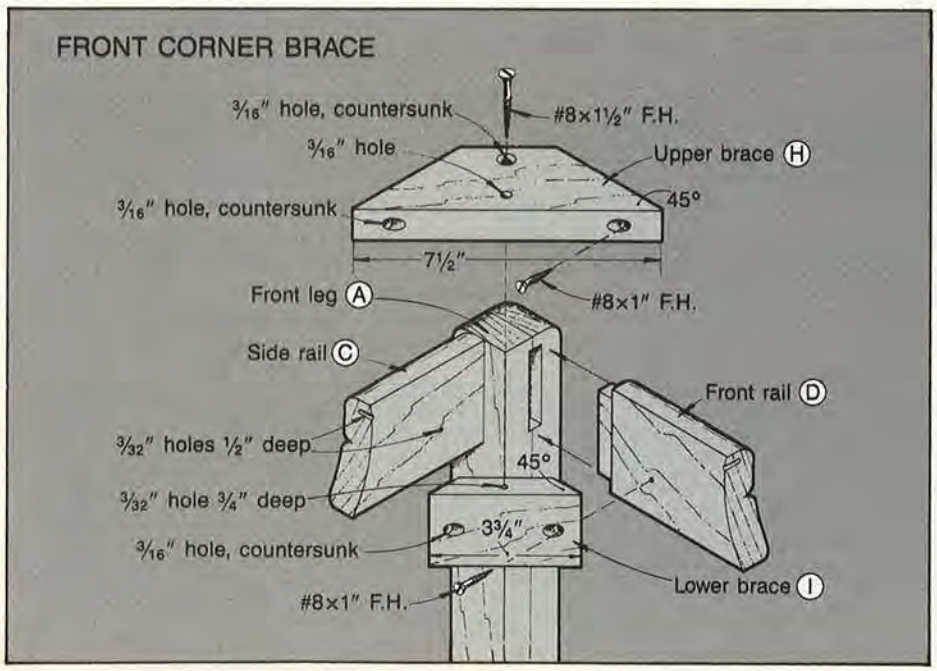
1 Sand the entire chair assembly smooth, breaking any sharp edges with sandpaper. Finish the chair as desired. (We used several coats of polyurethane.)

2 After the finish is completely dry, turn the chair upside down on a clean work surface. Drill pilot holes and fasten the seat-cushion assembly to the corner braces.



3 To achieve the curve in the lower part of the backrest, make a small cut (½" long) in the fabric along the bottom edge of the upholstered back, just in front of the hardboard. Then slip the top part of the upholstered back into the groove in the upper backrest. Press the hardboard back against the lower curved backrest (G) and clamp in position.

Insert a metal corner brace in the cut and in front of the hardboard as shown in the Seat-Back Drawing. Then screw the brace to the bottom side of G to secure the hardboard firmly against the backrest. (While we used the metal braces in the chairs we upholstered, an upholsterer used brads to fasten and bend the hardboard to the curved-lower backrest, eliminating the need for a metal brace.)



BUYING GUIDE

● ***3/32" Point-cutting ogee bit.*** Stock no. 9GT25583. $7.49 from Sears.

● ***Dowel-center set.*** Accurately locates matching dowel holes. Two centers each; ¼", 5/16", ⅜", ½"-diameters. Stock no. 9GT4184. $3.99 per set from Sears.

Produced by Marlen Kemmet
Project Design: David Ashe, Blueprint Workshop Company
Photographs: Hopkins Associates
Illustrations: Bill Zaun; Randall Foshee

SHARPENING YOUR SHOP TOOLS

DO WATERSTONES

Print this article

MORE AND MORE WOODWORKERS

Just a decade ago, only a handful of U.S. woodworkers knew anything at all about Japanese waterstones—except for the obvious fact that you use water, not oil, to lubricate them. Then, about five years ago, woodworking suppliers made waterstones available in the U.S. on a big scale. The stones caught the fancy of woodworking pros and now are intriguing home woodworkers.

Why all the fuss about these man-made sharpening stones (like natural oilstones, high-quality natural waterstones are disappearing fast—some now cost as much as $2,000!). In part, the stones' popularity reflects Americans' increasing fascination with Japanese woodworking methods and tools: The Japanese traditionally have preferred softer, finer waterstones for sharpening the hard steel used in their tools.

But other factors, such as speed of sharpening and grit consistency, also are selling waterstones for sharpening any tool that demands a finely honed edge.

WHAT WATERSTONES CAN OFFER YOU

Speed tops the list of waterstone attributes. All the woodworkers we talked to who use waterstones reported that they sharpen much faster than oilstones—"up to 10 times as fast," according to enthusiast Leonard Lee, president of Lee Valley Tools, a Canadian supplier.

It's not just that you spend less time getting a keen edge, Lee explains: "You can concentrate on controlling the exact shape of an edge. You make fewer mistakes."

WATERSTONE COMPARISON CHART

GRADE	JAPANESE NAME	GRIT	USES	HINTS & WARNINGS	AVERAGE COST*
VERY COARSE	*kongōsha-do*	80x to 220x	Part of complete sharpening system; removes maximum amount of metal. Takes out nicks and breaks, leaves cleaner edge on damaged blades, sets the bevel.	The coarse scratches it leaves need to be removed with finer-grit stones. Constant splashing with water required to flush the metal particles.	$9–20
COARSE	*ara-to*	700x, 800x	Removes small nicks, refines badly dulled edges, establishes bevels. Also helps clean edges scratched by VERY COARSE stones.	Raises burrs and leaves light scratches, which are removed by finer stones. Many bladed tools do not come presharpened: They have grind marks on the back and on the machine-ground basic bevel. COARSE and/or MEDIUM stones remove them.	$10
MEDIUM	*naka-to*	1000x, 1200x, 1500x	Sharpens knives, finishes carpentry tools, removes scratches caused by stones coarser than 1000x.	Raises burrs.	$10–20
FINISHING	awase-do	4000x, 6000x, 8000x	For fine honing, polishing, burr removal, etc. Use on both sides of blade to produce a fine edge.	Hones backs of blades until they are flat. Letting swarf (mud) accumulate and using less pressure as you finish honing will increase polishing action and produce mirror-bright finishes.	4000x: $15 6000x: $15 8000x: $25
COMBINATION	———	various combinations (see right)	100x/220x handles rough work; 180x/600x sharpens axes, drawknives, shears, sickles, etc.; 250x/1000x shapes and finishes blade for carpentry. With 1000x/6000x, the 1000x side takes out scratches, sharpens knives; 6000x side provides very good sharpness for finer work.	The 1000x/6000x is an excellent introductory waterstone. Along with a coarser stone, it makes a good basic sharpening system.	$5–25

*Varies by size; thicker deluxe stones cost more

HAVE THE EDGE?

SURE SEEM TO THINK SO!

Lee Valley Tools stocks both oilstones and waterstones and has researched the topic of sharpening stones extensively—even examining stones and sharpened chisels under the electron microscope in a procedure called photomicroscopy.

Their research confirmed manufacturers' claims that waterstone technology is superior in controlling at least two critical factors that determine the quality of a stone—consistent size of the particles bound together in the stone, and fewer hidden impurities that can ruin even the best natural stones for sharpening. And you get all this at a price that's competitive with comparable oilstones.

During the sharpening process, water helps keep blade edges cooler and washes away loose particles of stone and steel. This prevents the stone surface from glazing over.

SOUND TOO GOOD TO BE TRUE?

Make no mistake—there are some disadvantages. Because they wear faster, waterstones show chips, gouges, and unevenness more quickly than oilstones. Depending on how much you use them, they may wear out faster than oilstones, although they still last many years. (You'll probably drop and fracture one before you have to buy a new one.) Another potential frustration has been eliminated, since you now can obtain waterstones in a variety of unusual shapes and forms for sharpening curved edges, just as you can oilstones.

In the view of most woodworkers we talked to, the pros definitely outweigh the cons. A typical comment came from David Jordan, Editor of our parent publication, *Better Homes and Gardens*, and an avid woodworker. David has used waterstones for two years. "They cut fast, and you can really feel the bevel on the stone when you're sharpening," David says. "I'd pay five times as much for them. I still have my oilstones, but now I rarely use them."

What do the oilstone folks have to say about their new rivals from across the Pacific—competitors like Matsunaga Stone Co., Ltd., (King brand)? It's no surprise that they are taking note.

Bruce Anderson is product manager for Norton Pike Sharpening Stones, which markets both man-made and natural oilstones. "The Japanese do indeed have an excellent man-made stone. Their waterstones sharpen quickly and produce an edge comparable to that of our finest natural oilstones."

Watch for innovations from the oilstone manufacturers in the next few years. "We're working on a finer, harder man-made stone that you can use with oil, using technology that already exists in our industrial grinding wheels."

SOME NOTES FROM OUR SHOP

You never know till you try for yourself! We turned a couple of our editors loose in the shop one afternoon with Project Builder Jim Boelling and some very dull, nicked plane irons and chisels.

No doubt about it, the waterstones did the job faster than the oilstones we tried. We noticed cutting action immediately with the waterstones. The oilstones required several strokes before they really started to cut.

The oilstones we used had to be clamped in a vise during sharpening, which wasn't necessary with the waterstones (many come with their own wooden bases). Tip: The key to using most waterstones is to soak them for about 5 minutes before use; save time by storing larger stones in water.

We paid just over $50 for the 220-, 1,000-, and 6,000-grit waterstones we used (a combination stone would have saved us some money). Comparable grits in oilstones cost us about $40.

Written with Richard Mudrow
Photograph: Hopkins Associates

READERS, IT'S YOUR TURN! PROJECT

Print this article

Here we show off more examples of your handiwork, from the purely decorative to the decoratively functional: a minutely detailed clock, a painstakingly reproduced Victorian table, a whimsical child's door, and an intricately carved Polish eagle emblem. Once again, your projects demonstrate the many turns that woodworking takes.

A. All in good time

James Q. Buffenmyer, 65
Lombard, Ill.
Industrial model maker, retired

Jim set the hands of time in motion with this unique, interpolated, wall-hung timepiece. An inlaid mother of pearl dot on the moving dome marks the minutes while the inlay in the rotating star tracks the hours.

Think of the 12-pointed star as a large, glued-up sandwich of various woods. Jim first slices the wood at 45° on a table saw with a fine-tooth blade. Then he reslices the pieces at 60°. Finally, he reassembles the 1″-long, pointed pieces.

Making the star required a challenging 48 separate cuts, but as a former model maker for the Atomic Energy Commission, Jim had the experience. He's learned a few things, too. When working with small pieces, Jim uses the eraser end of a pencil to guide the tiny wood shapes through the table saw.

Jim mounted the dome on the minute-hand spindle of a battery-powered clock movement and used the hour-hand spindle to rotate the 8″-diameter star.

B. It all began with a jigsaw

Bill Kern, 40
Des Moines, Iowa
Photographer

Bill traces his woodworking activity back to a simple $9 jigsaw he bought to install a fireplace 8 years ago. That successful venture into the world of do-it-yourself piqued his interest to the point that the jigsaw now has been joined by a full complement of woodworking tools, many of which he used in crafting this 24″-high walnut Victorian table.

From a photograph in a furniture book, Bill drew his authentic design and working plans. To support the Italian marble top, he made a 2¼″ apron from laminated walnut. The legs were rough-cut on a band saw, then routed to shape. Supporting spindles were lathe-turned, as was the large, globe-shaped finial in the center. Bill shaped the flutes on the sphere by hand with carving chisels.

"I spend a lot of time on the finish because I'm very particular about what I put on the wood," Bill says. To begin with, Bill uses Victorian-type aniline dyes rather than stain to even out the color. Then he progressively sands with up to 220-grit paper. Next, he applies a sanding sealer and goes over it with wet/dry 220 paper. Two coats of sprayed-on satin varnish get sanded in between with 320-grit.

Bill, you're a stickler for a fine finish—and it really shows. Great work!

SHOWCASE

C. Eagle eye for detail

James J. McMahon, 61
Easthampton, Mass.
Chief petty officer, USN, retired

Jim's work reflects his travels. While in the Navy, he carved at sea what he recalled from many ports around the world. In Poland, the national eagle caught Jim's eye, but he waited for retirement to carve it. Eight-five hours of carving went into this uniquely personal memento.

His 22"-wide by 24"-high Polish eagle took three types of wood. New England "pumpkin" pine forms the body and head. To lessen the chance for breakage, Jim used hard maple for the legs, feet, and claws. Ash fit the bill for a pliable wood to fashion into curved tail feathers. Jim soaked and steamed the ash, then bent it into shape. All parts were first carved, then glued up.

For a finish, Jim applied artist's oils, dulled first with clear matte to knock down the sheen.

The carver says ready-made carving tools often don't allow him to shape every nook and cranny his eye perceives. So, he sometimes forges his own—a fast-shaving 4"-wide chisel, for instance. Now, that's complete talent!

D.

D. A spline in time

Lynn Yaple, 40
Grass Valley, Ca.
Printer/part-time cabinetmaker

Lynn didn't have to hover over a drafting board sketching out ideas for his child's bedroom door. The design came naturally when a friend gave him the "Winnie the Pooh" stained glass.

He completed the entire door in two days, but a good deal of that time was taken up by the window molding. A square or circular molding would have made life easy, but the elliptical molding proved a tough cut to make. Lynn rabbeted the door panel to accept the window. Then, he also rabbeted the molding so that it would fit into the door and help hold the window in place.

In a departure from typical door construction techniques, Lynn used splines and mortises to join the redwood stiles and rails of the frame. "The spline gives you more gluing surface so the door is stronger than with dowel construction," he explains. Lynn cut the 5½"-long × 3¼"-deep mortises with a plunge router to control the cut. He finished the door with lacquer.

To submit your projects . . .
Send a 35-mm color slide, with the project as the focal point and a simple background—no people. Include a capsule description—materials, special joinery, finish, and dimensions, for example. *WOOD* will pay $25 for published projects. Slides cannot be returned unless you enclose a self-addressed, stamped envelope.

Project Showcase
Better Homes & Gardens®
WOOD magazine
Locust at 17th
Des Moines, IA 50336

AIR POW

If you think the only thing you can do with an air compressor is inflate tires, think again. Compressors make many shop chores easier, and accessories can replace conventional power tools. But they don't come cheap, and noise and moisture can pose problems.

Print this article

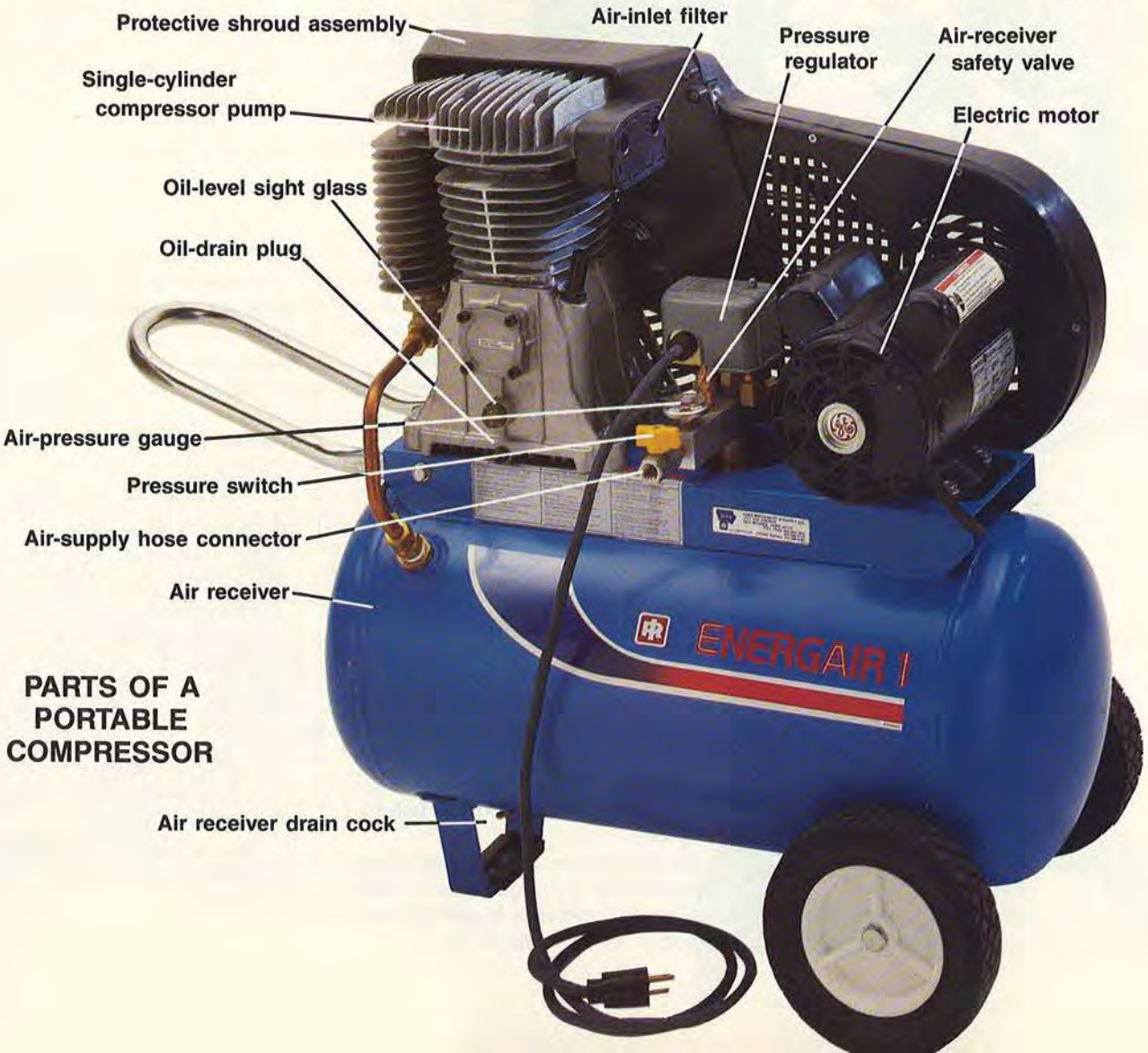
Until we set up the workshop at *WOOD*, most of us on the staff thought of an air compressor as a nice but expensive luxury. Now, we use it consistently for blowing sawdust off workbenches, machinery, and ourselves, as well as for spraying finishes. Our compressor has become a handy, efficient, and very nearly indispensible tool.

While we are just experimenting with other air-powered tools, at least one woodworker we've come to know quite well—industrial arts professor and cabinetmaker Roger Cliffe—finds pneumatic tools essential in his custom cabinet shop. Before you rush out and buy an air compressor, though, there's plenty to consider to ensure that you make the best choice.

HOW AIR COMPRESSORS WORK

Basically, an air compressor uses an electric motor or gasoline combustion engine to power a pump (for safety's sake, gas engines shouldn't be used in the shop). The pump itself, similar to a small engine, has a piston, connecting rod, crankshaft, flywheel, head, and valves.

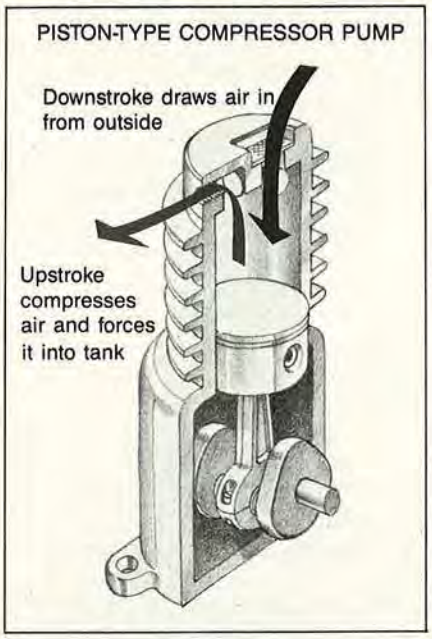
While running, the pump draws air in through a thin metal valve in the head and compresses it with a piston.

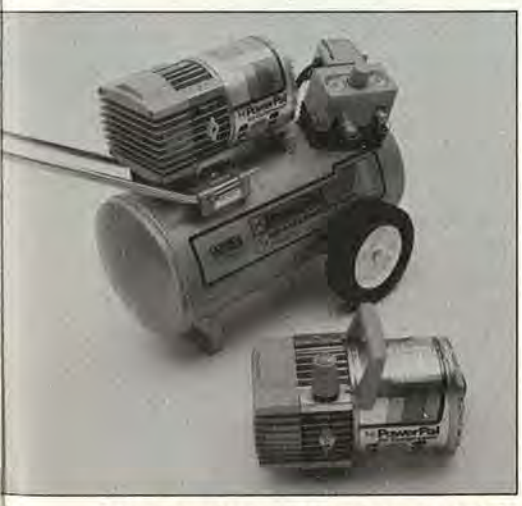


PARTS OF A PORTABLE COMPRESSOR

VER! WHAT AN AIR COMPRESSOR CAN ADD TO YOUR WORKSHOP

Compressed air exits the pump through another valve for storage in the receiver, or tank. This pumping process continues until enough pressure builds up to trip the sensitive pressure switch, which then shuts off the power source. As the air is used up and the supply is depleted, pressure drops and the switch restarts the pump for another cycle.





Three popular compressor types. At *left*, a 1½ hp., single-cylinder compressor does a host of shop chores; it requires regular maintenance. *Top*, a ¾ hp. maintenance-free, direct-drive model will spray and power a few air tools. *Above*, a ½ hp. direct-drive compressor with no air storage. For cleanup and light spraying, it must run continuously.

An air compressor also requires a regulator, mounted on the tank, to control the pressure at which air is delivered to the tool you're using. You can adjust the regulator for more or less pressure as required. A safety valve, also tank-mounted, will open and relieve pressure should a malfunction fail to shut off the compressor motor. All air compressors must have this valve.

Compressor options

If you added another cylinder with a piston to the compressor pump just described, you would have a *twin-cylinder* compressor. It pumps and compresses air twice as fast as one with a single cylinder, but can run on the same size motor. Of course, it also costs more.

Two-stage compressors add another pumping chamber to the process already described. These units take in air and compress it in one pumping cycle, or stage, then further compress it in a second stage to a higher pressure. For practical purposes, a two-stage compressor delivers air at a higher pressure than a single-stage unit, the air supply lasts longer, and the motor won't run as often. Most commercial and industrial compressors are two-stage units.

Direct-drive or "oil-less" compressors operate similarly to a single-stage model, but the motor directly drives the pump without benefit of flywheel and pulley. Because of this arrangement, they have less power and capacity.

WHAT YOU CAN DO WITH A COMPRESSOR

Spray surface finishes

Jim Boelling, our project builder, has switched completely to spraying for surface finishes. Why? "Until now, finishing has always been a real chore. Using the compressor to spray on a finish is not only fast and easy, it gives a super result because you can control the amount of material being applied and the pattern," Jim says.

That's because an air compressor-powered spray gun emits the finishing material in an extremely fine mist that lays down exceptionally smoothly. Preparing a surface for finishing also becomes a snap with air power. You simply blow the surface clean.

Power pneumatic tools

Nail guns, glue guns, chisels, sanders, screwdrivers, saws, and even routers are available for compressors nowadays. Roger Cliffe, in his cabinet work, uses two air-powered nailers that shoot fasteners from ¾" to 2½" long for 90 percent of his fastening. Together, the nailers cost more than $700. "They're fast, they have enough impact that you don't have to drill pilot holes, and they're long-lived," he notes. "You *do* have to oil their seals regularly with a special lubricant or they harden."

According to Cliffe, air tools are insensitive to abuse and dirt—except in the air line itself—and they don't often break down. "When they do, they're inexpensive to fix."

This straight-line pneumatic sander from Sears is lighter than an electric belt sander and produces 3,000 back-and-forth strokes per minute.

Continued

AIR POWER!

Air tools generally weigh less than conventional electric tools, since they use a small, turbine-type motor or air cylinder rather than the metal windings and housing of an electric motor. They won't get hot after prolonged use, or lose power in tough work. However, air tools cost more than a comparable electric tool, and many of them require a large-output commercial compressor.

HOW TO CHOOSE AN AIR COMPRESSOR

Shop for capacity

Home centers, large hardware stores, major retail department stores, and mail-order woodworking tool suppliers all sell air compressors. So do local suppliers to the building and construction industry. You can find businesses specializing in their sales and service in the Yellow Pages under "compressors."

Wherever you decide to buy, shop for *capacity*. Know what air tools you want to use and their compressed-air requirements, then match your needs to a compressor with that capability. Delivery capacity simply means the amount of compressed air the unit will provide, the pressure at which the air gets delivered, and how long that air supply will last during use.

Understand air delivery requirements for different uses

"In choosing an air compressor," advises Nick Antonecchia of Campbell Hausfeld, a manufacturer of air compressors for home use, "have in mind what you want to do with it. Each tool requires a certain air delivery rate stated in cubic feet of air per minute (c.f.m.) at pressures ranging from 40 to 90 pounds per square inch (p.s.i.). Look for an air compressor that fits your tools' needs, in both c.f.m. and p.s.i."

If, for instance, you plan only on doing some spraying and pneumatic fastening, you can get by with a much smaller compressor than if you want to do much sanding, since sanders require a greater amount of air. With too small a compressor, you'll always be playing "catch-up"—waiting for it to build up enough air for you to continue working.

Many manufacturers place a chart decal right on their compressors that lists which air tools the compressor will handle.

CHOOSE A COMPRESSOR BY THE TOOLS IT CAN POWER

NOTE: Specifications based on *Chargeair Pro* compressors by Ingersoll-Rand; others may vary.

COMPRESSOR SIZE/DELIVERY			All-purpose spray gun	Nail gun	6" dual-action sander	⅜" drill	Straight-line sander
hp.	voltage	c.f.m. at 40/90 p.s.i.					
¾	115	2.9/2.6	Yes	No	No	No	No
1	115	4.5/4	Yes	Sometimes*	No	Sometimes*	No
1½	115	4.8/5	Yes	Yes	Sometimes*	Yes	No
2	115	6.8/6.1	Yes	Yes	Yes	Yes	No
3	230	10.9/10.6	Yes	Yes	Yes	Yes	Yes

*Adequate for less than constant-use, production-type work.

Horsepower doesn't always tell the story

While home-type electric air compressors (normally 2 hp. and under) carry a motor horsepower rating, the size of the motor isn't as important as the amount of air it will deliver and at what pressure. Because of differences in pump design, two compressors of equal horsepower made by different manufacturers may not have the same air-delivery performance. (Refer to chart, *above*.)

Remember, too, that motors 2 hp. and under normally run on 115 volts; those over 2 hp. (and some 2 hp. models) require 230-volt operation. Your shop wiring could limit your compressor choices.

Air storage—think big!

Henry P. Van Ormer of Compair Kellog, maker of Kellog-American air compressors, suggests that it's also important to buy air-storage capacity. "The homeowner is looking at a choice of 10-, 12-, 20-, 30-gal., and even larger tanks. I'd recommend the largest you can afford, since the cheapest thing you can buy when you're talking air compressors is storage." We've found that a 20-gal. tank proves more than adequate, at least for a portable unit.

Stationary compressors, which you can't easily move around the shop, normally are equipped with larger (and thus heavier) tanks. They also have larger motors—usually 3 hp. or more.

While your storage capacity options in a portable compressor may be limited at the top end by tank weight, portables get the nod for versatility. If you're going to use a compressor both in and out of the shop, you won't want a heavier tank than you can push or pull with little effort.

Whatever size tank you choose, remember not all like-sized tanks are created equal, however. Better-quality tanks carry a plate that says they meet the code set by the American Society of Mechanical Engineers (ASME). And tanks should have a drain valve so you can empty them of condensation.

WHAT AIR POWER COSTS

Simply put, the more cubic feet of air per minute that a compressor can deliver at a given p.s.i., the more it will cost. You can buy a ¾ hp. air compressor suitable for spray finishing, nonproduction fastening, and shop cleaning for under $200. For one that will handle about any air power chore in the home workshop, you'll pay up to $600. And commercial, two-stage units that can run pneumatic routers and other high-power air tools start around $1,000.

Used units occasionally turn up in the classifieds. You can save big this way, buying larger commercial units originally owned by service stations, farms, and auto body shops.

MAINTENANCE GUIDELINES

Compared to many other tools, standard air compressors are reliable and trouble free, if you maintain them. (Oil-less types are totally maintenance free.) This means checking the oil level in the sight glass and cleaning or chang-

Air tools, a woodworking option. Shown above: 1) *Bostich brad tacker,* requires 4.7 c.f.m. at 80 p.s.i. for 100 nails per minute, $435; 2) *Binks production spray gun,* 6.5 c.f.m. at 40 p.s.i., $90; 3) *Allied Pneumatic ⅜" air drill,* 4 c.f.m. at 90 p.s.i., $60; 4) *Rockwell industrial router,* a hungry 50 c.f.m. at 90 p.s.i., $750; 5) *Powerdyne orbital sander,* 6 c.f.m. at 60 p.s.i., $30; 6) *Speedaire blower,* all pressures, $5.

ing the air intake filter. "When you don't, the suction and discharge valves will clog, burn, and have to be replaced," says Russ Morine, a repair specialist at AirMac, a compressor sales and service company in Des Moines.

Roger Cliffe looks at air compressors as if they were cars: "You feed them oil and change filters, then run them until they're due again."

Both Morine and Cliffe agree that moisture which condenses out of compressed air can be a problem. It can ruin a sprayed-on finish or rust a tank. They recommend draining air lines and tank both before and after use, especially in high humidity. This eliminates oil in the lines, too.

Short air lines with moisture traps at the end of runs help a lot, too, because the hot compressed air won't have as much time to cool off and let the water vapor condense out. When water does collect, it's easily emptied.

WHAT ABOUT NOISE AND HEAT?

An air compressor's on-again, off-again recycling can be bothersome to others, and to you. Cliffe suggests situating a compressor outside the shop, if at all possible, to reduce the noise level. This also keeps a unit sawdust free.

Morine solves the noise problem by retrofitting even a home compressor with an industrial-type inlet filter/silencer. The cost: about $20.

Besides creating noise, compressors create heat. In normal operation they may reach over 200 degrees F. Insulated heat shields, found on many compressors, make a sensible feature. Compressors without shields should be placed to reduce the possibility of burns or damage from heat.

AIR COMPRESSOR CAUTIONS

- Wear eye protection when cleaning with compressed air. Harmless wood chips can become shrapnel.
- A compressor constantly running close by could damage hearing, so wear ear plugs or muffs.
- Spray in a well-ventilated area. Keep overspray off surfaces by setting aside a place for finishing.
- Unplug the motor before any maintenance. A drop in pressure could suddenly trigger the unit.

For more information on air compressors for the home workshop, write the following major manufacturers:

American I.M.C., P.O. Box 7582, Charlotte, NC 28217

Atlas Copco Standard Pneumatic, 4070 W. 150th, Cleveland, OH 44135

W.R. Brown, 2701 N. Normandy Ave., Chicago, IL 60635

Campbell Hausfeld, 100 Production Dr., Harrison, OH 45030

Champion Pneumatic Machinery Co., 1301 N. Euclid, Princeton, IL 61356

Dayton Electric Manufacturing Co., 5959 W. Howard St., Chicago, IL 60648

Ingersoll-Rand Co., P.O. Box 241154, Charlotte, NC 28224

Kellog-American Inc., P.O. Box 159, Rt. 125, Kingston, NH 03848-0159

Sanborn Manufacturing Co., P.O. Box 206, Springfield, MN 56087

Sears Roebuck & Co., Sears Tower, Chicago, IL 60684

Sofragraf Unifix Inc., 2520 Electronic Lane, Suite 804, Dallas, TX 75220

Thomas Industries, Inc., Power Air Division, 1419 Illinois Ave., P.O. Box 29, Sheboygan, WI 53082-0029

Total Shop, P.O. Box 16297, Greenville, SC 29606

Written with Gregory C. Erickson
Photographs: Bill Kern; Hopkins Associates; Perry Struse
Illustration: Jim Stevenson

5 STRATEGIES TO MAKE

Ready to set up a shop of your own—if you could find the space? Or maybe you have a small shop that seems to be getting smaller as your woodworking expands. Whatever situation you find yourself in, here's help. We mapped out three typical small-space shops, then came up with surefire strategies to beat the space squeeze.

1 CHOOSE YOUR TOOLS THOUGHTFULLY

Which tools do you have to have? Admittedly, in tight quarters your options are limited. Thousands of craftsmen in such situations turn to a multi-purpose tool that saws, drills, bores, turns, and sands.

The other approach is task-oriented tools. Here's where you must focus and select the stationary power tools you *really* need to do the work you want to do. Perhaps a table saw, or radial arm, and some portable power and hand tools will fill the bill. But most of us either have—or would like to have—a greater selection. Our model shop layouts on the following spread indicate how you can fit them in.

How do you choose? Look at what the tool can do for you. A band saw, for instance, cuts thicker stock faster and makes smoother curves than a scroll saw. A scroll saw cuts a tighter curve, can remove the center from a pattern, and the blades cost less.

Have you ever considered what you can do with a power miterbox? This tool solves the problem of how to cut off long stock in short spaces where the table saw would be hindered. A radial arm does that, too, but it takes up more than its share of space in a shop that already has a table saw. The power miterbox, on the other hand, is space efficient.

No matter which tools you elect to have in your shop, keep their quality in mind. You can't do first-rate work with second-rate tools, or those not designed for the job.

2 MAKE YOUR EQUIPMENT DO DOUBLE DUTY

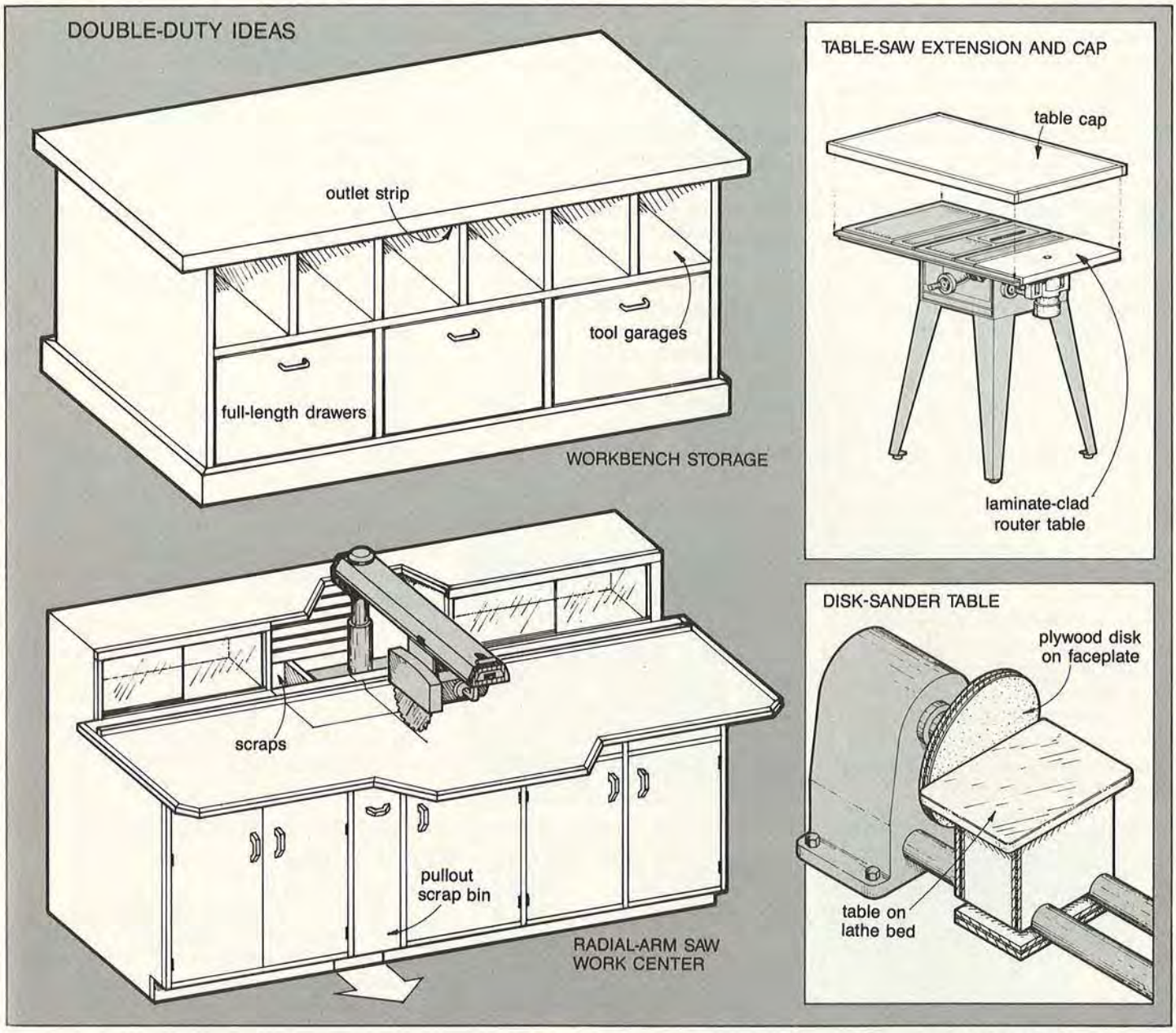
A workbench acts as the hub of any workshop. For small spaces, select a workbench 4′ to 5′ long and 24″ wide. If you make it the same height as your table saw top, it can also support sheet goods when ripping. In our drawing, *top right*, we added storage for portable power tools and bins for supplies below a table-type bench.

A good-quality 8″ or 9″ table saw, properly adjusted and fitted with a sharp carbide-tipped blade, can cut accurately enough to do much jointer work. For an extension, equip it with a plastic laminate-covered plywood router table. Also consider making a lift-off top, as shown, *top far right*, and you have extra bench space.

Too cramped for a table saw? Opt for a radial arm against a wall, as in our long, narrow shop plan. With a little cabinet work, you can transform the space it occupies into a real work center, with bench and storage above and below (see the drawing, *above right*).

Print this article

SMALL SHOPS WORK BIG!



The drill press, considered essential in many shops, easily fits into a corner. If you have a floor model, fit it with a plywood table and use an accessory drum sander for maximum versatility.

Lathes can do double duty, too. Attach a table to the bed, mount a sanding disk to the head stock, and you'll have a two-in-one tool. You can even call on the lathe stand for needed support when cutting long stock on the miterbox, as in our basement shop plan on the following page, by slipping in a "stool" under the stock to gain height. Our close-up view, *above right*, shows the customized lathe.

A note about lighting: Use 4′ or 8′ 80-watt fluorescent fixtures or 150-watt bulbs on a separate lighting circuit. Check for proper intensity by setting a block of wood at different places around the shop—if it doesn't cast a shadow, your lighting is bright enough. Paint, too, brightens a small shop situation. Paint all walls, and even the ceiling where possible, stark white. It makes the room seem larger.

3 PLAN YOUR WORK IN STAGES

In small shops you can't afford clutter. Organize your work into stages, or steps, and cleanup after each session so there's enough room to get each step completed. Here's how its done:

Step 1. Rip and cut off stock into manageable parts, so you won't have to handle large pieces in the middle of the project.

Step 2. Complete cuts, joinery, and assembly necessary for all sub-assemblies.

Continued

MAKE SMALL SHOPS WORK BIG!

Step 3. Use your assembly bench to join the sub-assemblies.
Step 4. Apply finish in the assembly area, but use only those finishes in the shop that don't require a dust-free atmosphere. Spray outside or in a separate area.

4 KEEP MATERIAL NEATLY AT HAND

Boards and other long stock such as molding should nestle against the ceiling or along a wall. You can make a simple overhead rack of 2×4s, then hang it from the rafters. On the wall, use shelf brackets.

You have two ways to go with 4×8′ plywood panels. To take up the least amount of floor space, stand them on end, if you have enough head room. This works well in a garage.

You can also store plywood on edge behind a partition, but this requires one end of the space adjacent to a doorway for access, such as in our basement shop plan.

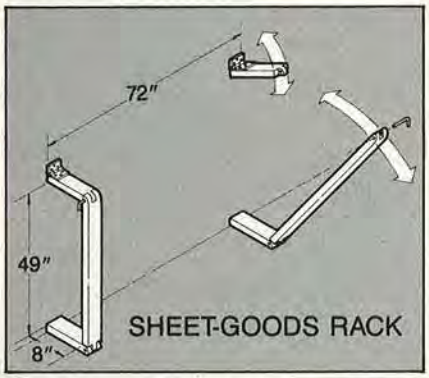
Another alternative is the fold-down sheet-goods rack shown in the drawing, *right;* it allows you to remove panels from the front. This is a real space-saver. It's used in our long, narrow shop layout.

Then, there's always the garage if you lack space. Use a portable circular saw to rip sheets before moving them to your shop.

5 GO FOR EFFICIENT SHOP LAYOUT

Just as in your kitchen, getting things done efficiently depends largely on shop layout. Where you position your equipment determines how workable your shop will be, and how comfortable it will be.

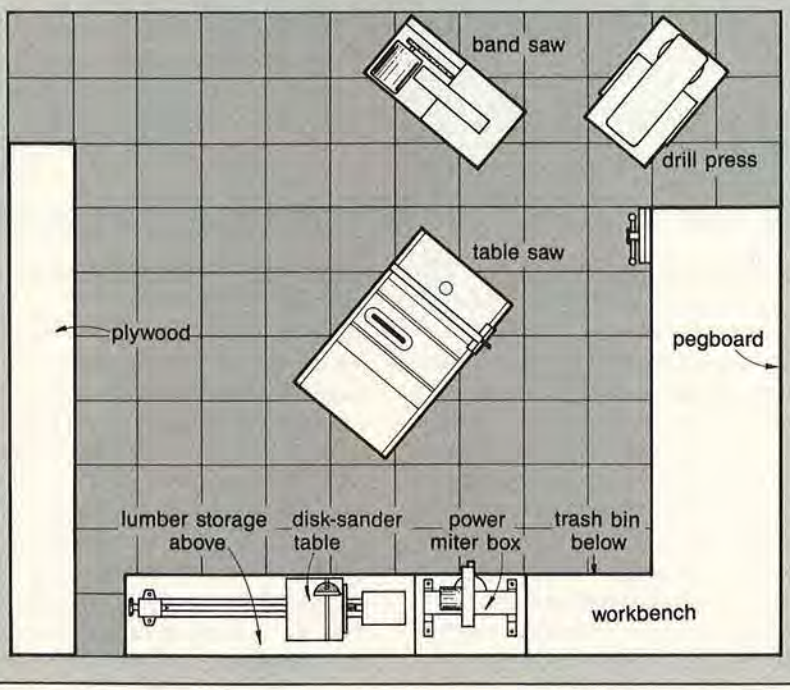
Situate your stationary power tools according to your working patterns, and the shape of the space. Do allow for certain minimum passageways and areas. For guidelines, we figure on 18″ to 24″ walkways between benches and machinery or between stationary tools. To work between benches and equipment, rather than just walk, you need 30″ to 36″.



At the bottom of this page and on the next page are workable, efficient shops in three typical configurations—one of which may be just like the space you have or want to create.

MAKE YOUR STRATEGIES PAY OFF

By combining your tools with an efficient plan, you can make your small space shop work big, as the three examples show. If you're fortunate enough to already have a big shop, you'll find that adopting some of our ideas can help you, too. Have an idea of your own on how to make small space work better? Jot it down and send it to us! Include a snapshot or sketch to help explain, if you like. We'll pay you $25 if we publish your idea. Sorry, your material cannot be returned unless you enclose a self-addressed, stamped envelope. **Send your ideas to:** Small-Space Shop Strategies, Better Homes & Gardens® *WOOD* Magazine, Locust at 17th, Des Moines, IA 50336.

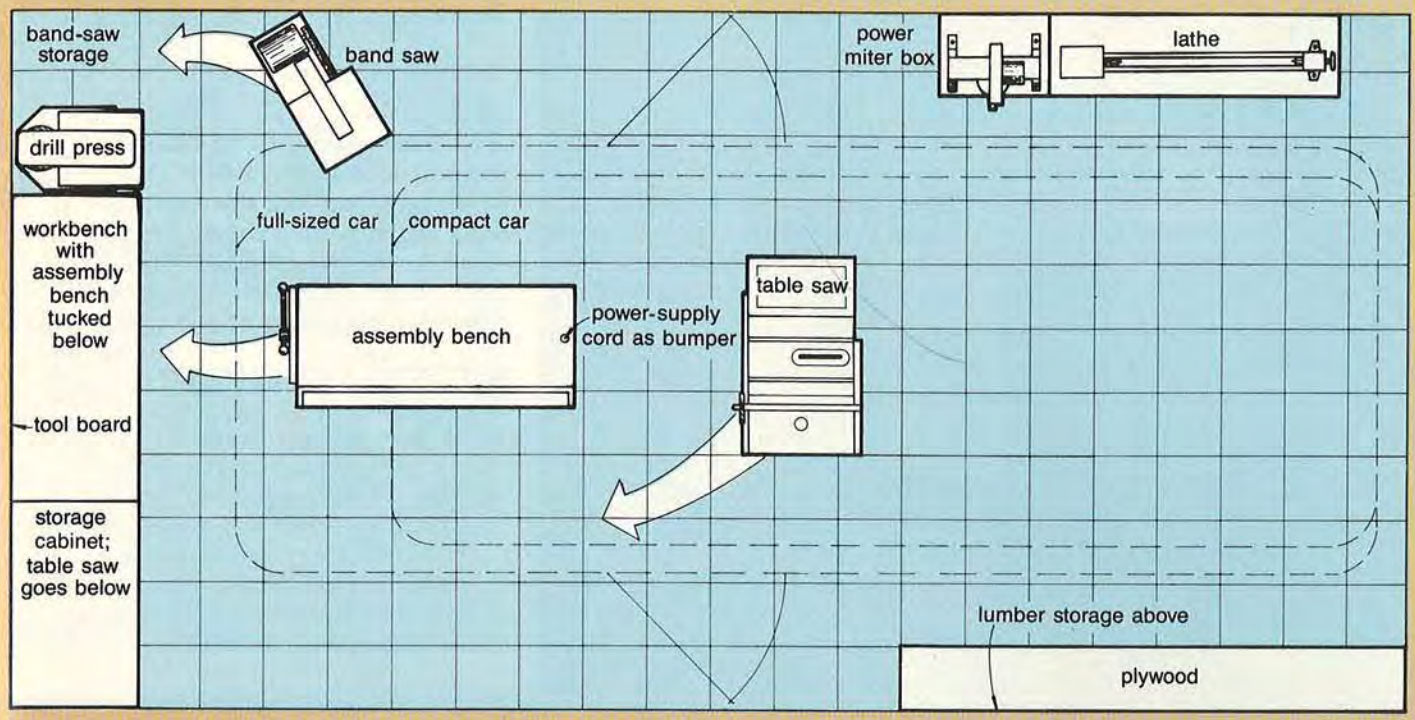


●TYPICAL 10×12′ BASEMENT SHOP

A table saw centered in the room at a diagonal accommodates long ripping chores. If you cap the saw with a lift-off table, you add a centralized assembly bench.

Note how the power miterbox nestles on the end of the L-shaped workbench to leave plenty of room for cutoff. You can even use a "stool" on the lathe bed for extra support of long pieces. Tucked out of the way under the bench next to the miterbox is a trash bin. Above and below the bench there's storage for tools and supplies. For ripping support, the bench is the same height as the table saw.

Across the room, the drill press and band saw are set diagonally to allow clearance for workpieces.



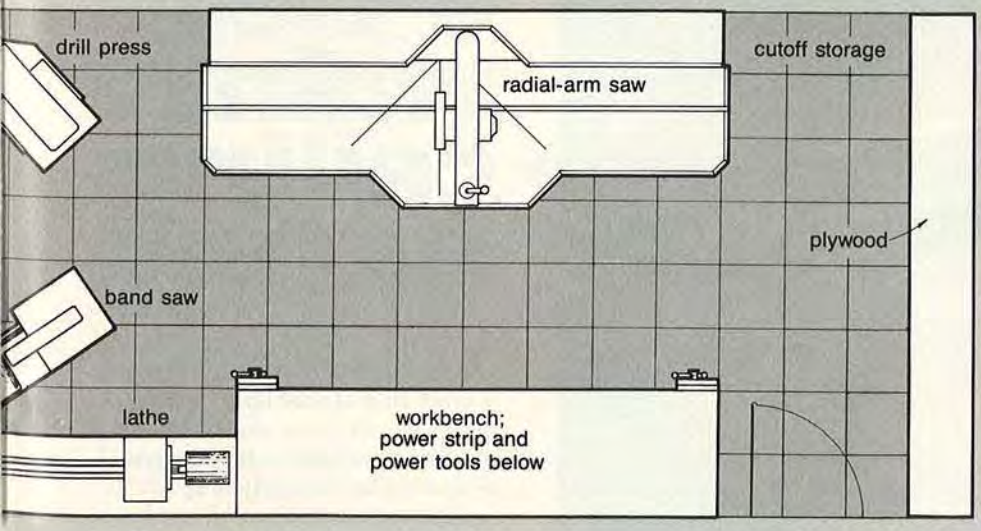
●THE 11×22′ GARAGE SHOP

This space could be in a single-car garage or in one-half of a double garage. In either case, we've assumed you have to share space with a vehicle. Here mobility plays a prominent role.

Casters on the table saw, band saw, and the assembly bench allow you to easily push them out of the way. Since concrete floors tend to be uneven, use heavy, wide casters equipped with locking devices.

At the back of the garage, ahead of the parking area, you'll see the permanent part of the shop. An electrical cord with a rubber-clad outlet hangs from the rafters as a reminder of where to park. It nudges the windshield when it's time to stop, and provides electricity to the assembly bench.

We kept the height of the assembly bench the same as the table saw for panel support while ripping. When you're not using the bench, it tucks away beneath the other.



●THE 8×16′ LONG, NARROW SHOP

Because this type of space lacks the all-around clearance a table saw needs, we chose a radial arm and tucked it against a wall in its own work center. Now, workpieces run the length of the room for cutoff; the blade changes direction for rip and miter operations.

Convenient to the saw, the workbench is just a few steps across the room. Tools hang over it and other tools and supplies go below.

The lathe fits nicely in a corner at one end of the bench. Sheets go on edge in a fold-down rack.

Illustrations: Jim Stevenson; Bill Zaun

The Old Lamplighter

REDWOOD LANTERN

Print this article

An exterior light fixture must not only look distinctive—it also has to withstand the elements. We think this appealing fixture of redwood, brass, and acrylic fits the bill on both counts. Build one or a pair for your entry or patio.

BUILDING THE LANTERN CARCASS

1 Rip, then crosscut the stiles (A), rails (B, C), and mounting-frame members (D, E) to the sizes listed in the Bill of Materials. Letter each piece for future ease in assembling.

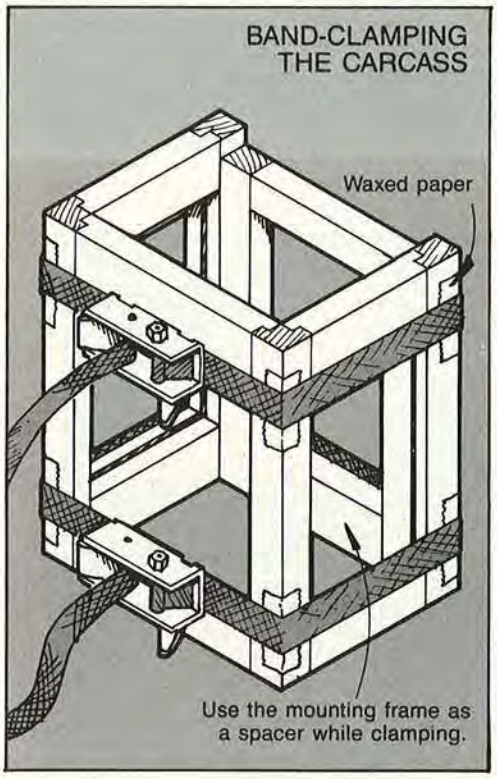
2 With a table saw and dado blade or a table-mounted router fitted

2 Bright Ideas

Nifty Light Cover-Ups from Our Shop

3-tier walnut ceiling fixture

You won't find another lighting project that stacks up as handsomely as this one does. It's simply three mitered walnut frames joined to white acrylic and a mounting frame.



with a ⅜" rabbeting bit, cut ⅜" rabbets ¼" deep along one edge of the stiles (A) and rails (B, C). Turn the rails (B, C) over, and cut the same-sized rabbets on both ends. Test-fit the rails and stiles together; adjust the rabbet depth if necessary so the faces are flush. (We cut the rabbets along the edges of the stiles and rails on a table saw fitted with a dado blade and an auxiliary wood fence. We then switched to a miter gauge when rabbeting the ends of the rails.)

3 Individually glue and clamp the two side frames (A–B), the front frame (A–C), and the mounting frame (D–E) together. Remove excess glue after it forms a tough skin. After the glue dries, sand the frame smooth.

4 Set your table-saw blade at 45° and bevel-rip both edges of the front frame and the front edge of each of the side frames, as shown in the Exploded-View Drawing on p. 61.

5 Glue and clamp the front and side frames together, as shown in the Band-Clamping Drawing, *left*, using waxed paper to keep the glue from sticking to the band clamps. [We used the mounting frame (D–E) as a spacer; it's *not* glued in place.]

CONSTRUCTING THE ROOF

Note: You've probably already learned that cutting compound angles can be confusing. To guarantee a tight fit, read the instructions and study the drawings carefully, then make test cuts in scrap before sawing into your redwood stock.

1 Lay out and mark the angles and notches on the redwood roof supports (F, G) as dimensioned in the drawing on the next page, then cut F and G to shape, as shown.

Continued on next page

Ready to scrap that old fixture for something better? Then shed some new light on the subject with these two clever cover-ups—a traditional redwood lantern for outside and a contemporary walnut fixture for inside. Each is guaranteed to add a new glow to your home.

BUILDING THE WALNUT FRAMES

Note: We designed this fixture to cover up a round fluorescent light fixture. Measure your existing fixture and adapt our dimensions to fit your light if necessary.

1 Resaw ½" stock from ¾" walnut stock. Rip 12 frame members (A) to width and crosscut them to 17¼" long from the ½" stock. Miter-cut all frame members, as shown in the Frame-Member Drawing, to a finished length of 16⅛". (We cut scrap material first to ensure an accurate 45° miter.)

2 Using miter clamps as shown in the photo, *right*, glue and clamp the three walnut-frame assemblies together. Sand the mitered joints smooth and rout a ¼" round-over on all outside edges.

3 Finish-sand the three frame assemblies and finish with several coats of polyurethane.

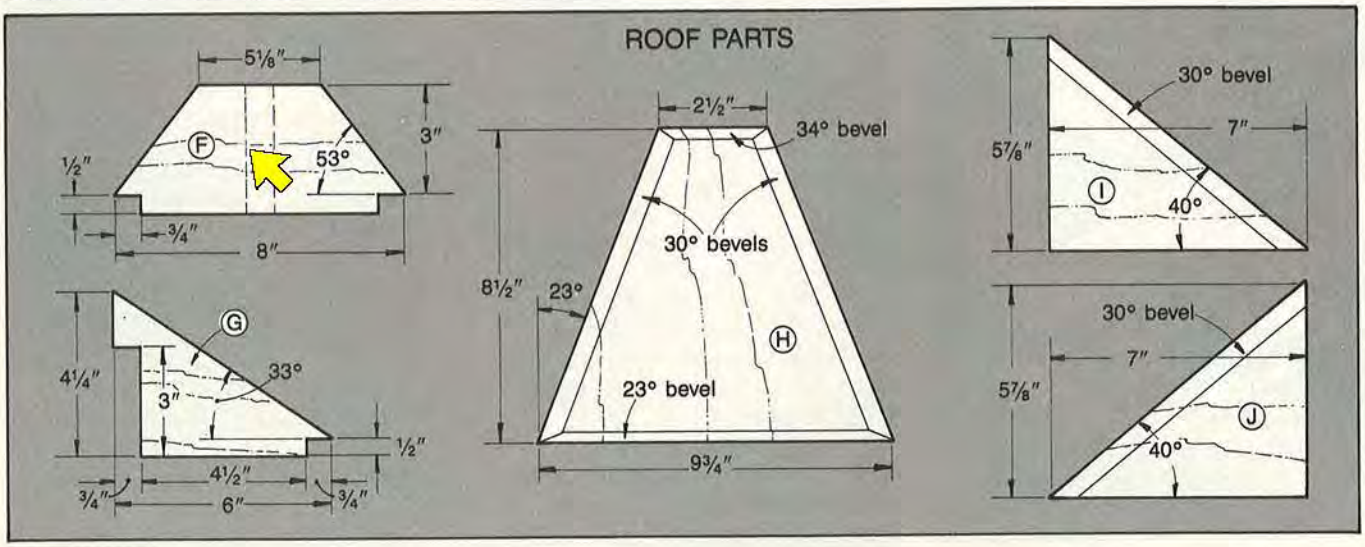
Note: If you plan to use the cover-up over an incandescent or other high-heat generating light, cut ventilation slots. Start by marking their position, then drill ¼" holes at each end of the marked slots. Use a router with a ¼" straight bit to rout the acrylic between the drilled holes. You'll also need at least 1" clearance between the incandescent bulb and the bottom acrylic panel (C). To meet the 1" requirement, cut the acrylic panels (B) wider.

ASSEMBLING THE COVER-UP

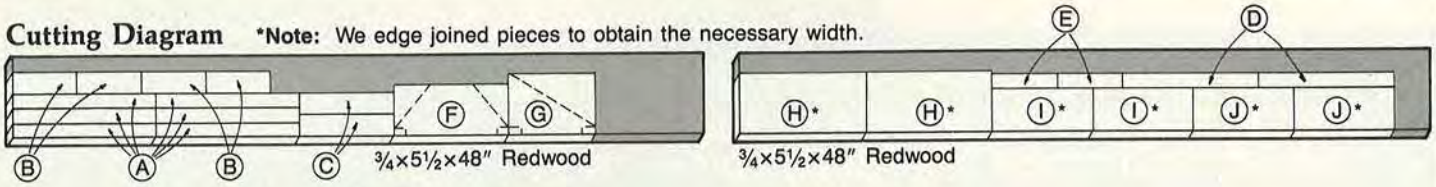
1 Using a table saw fitted with a sharp blade, preferably carbide, cut the acrylic side panels (B) to size plus 1/32" to 1/16" in width and length. With a sanding block, hand-sand

Continued on page 62

REDWOOD LANTERN



Cutting Diagram *Note: We edge joined pieces to obtain the necessary width.



2 Glue F and G together, then glue and nail this assembly to the carcass with 1" brads. (We dulled the points of our brads to prevent them from splitting the grain when driven into place.)

3 Rip and crosscut enough stock to glue up the front roof section (H), then edge-join the pieces, and trim H to 9¾×8½". Bevel-cut the bottom of H at 23°, then bevel-cut the top at 34°, as shown in the Roof-Parts Drawing.

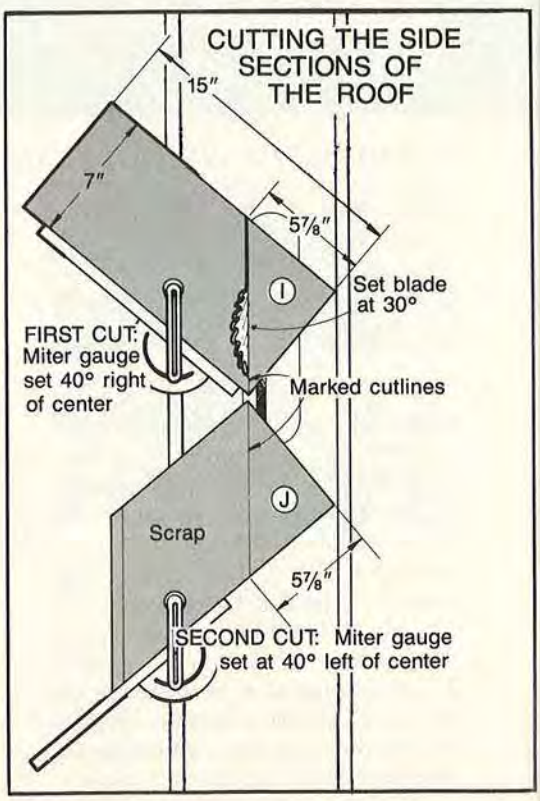
4 Mark the location of the two required cuts on both sides of H. Using the saw setup shown, *right*, position the miter gauge in the right-hand slot. With the already-cut end bevels facing down, cut one side of H.

Move the miter gauge to the left-hand slot and, with the end bevels facing up, cut the other side of H as indicated.

5 To form the side roof sections (I, J), rip, then crosscut a piece of redwood stock to 7×15". Using the saw setup shown in the drawing, *far right*, bevel-cut one I and one J.

6 Test-fit the roof assembly (H-I-J) over the lantern carcass and make adjustment cuts as necessary. Spread glue on the surfaces to be joined and hold the roof assembly together with masking tape until the glue dries. (Masking tape works well when clamping irregular surfaces and other clamps just won't do. Use wide masking tape and make sure the two surfaces to be taped are clean for good adhesion.)

7 Drill pilot holes through the roof assembly, then use 4d finishing nails and glue to attach the roof assembly to the carcass. (When drilling pilot holes for nails, cut the head off of the size nail you intend to use. Tighten the nail in the



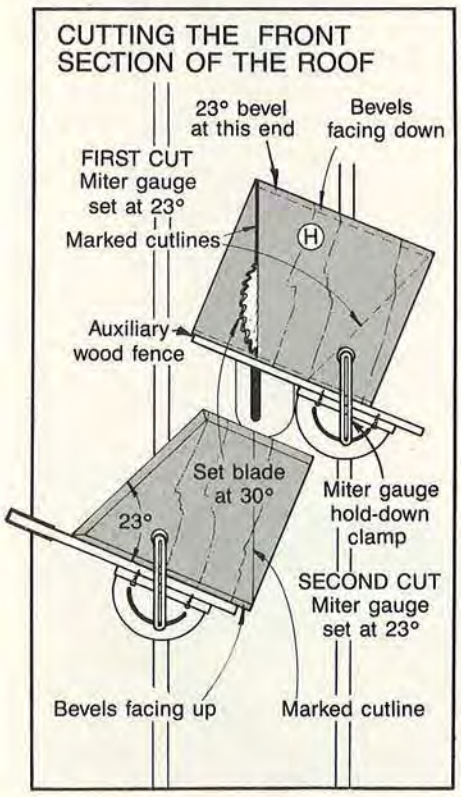
2 Bright Ideas

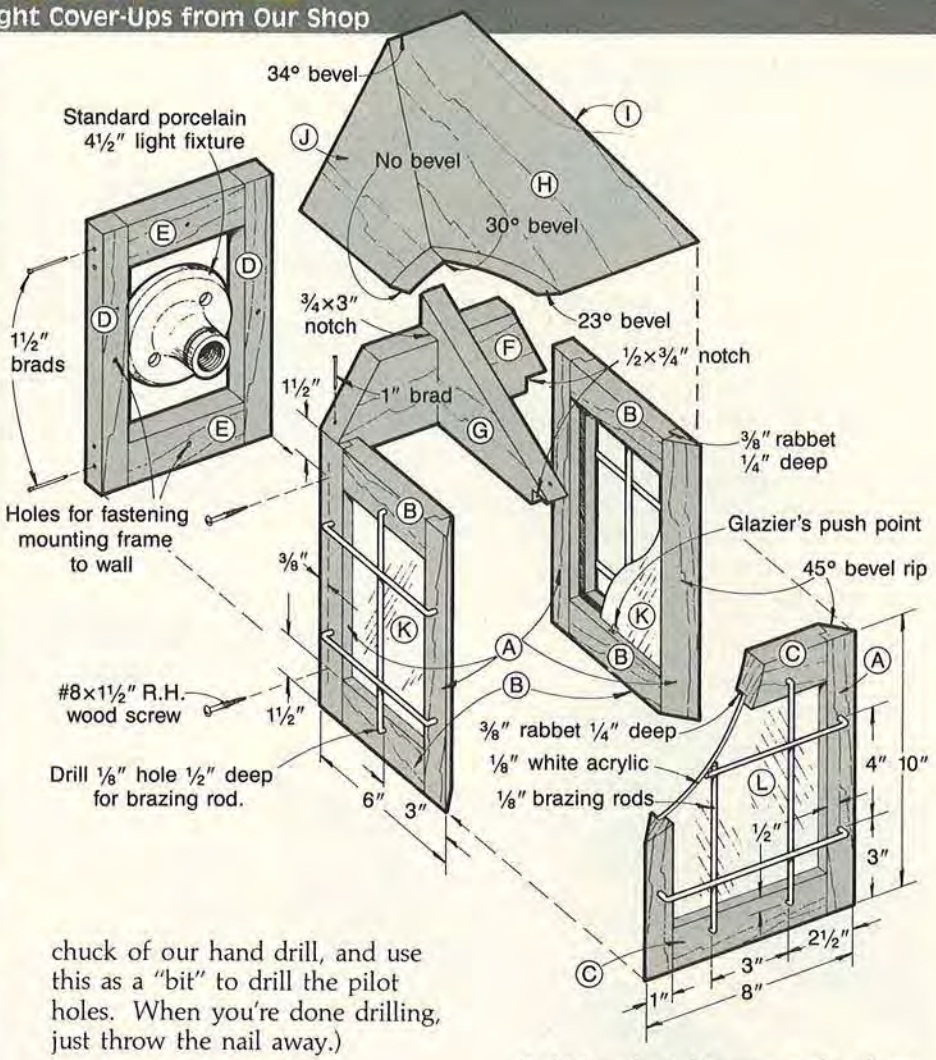
Nifty Light Cover-Ups from Our Shop

Bill of Materials					
Part	Finished Size*			Material	Qty.
	T	W	L		
A	¾"	1"	10"	redwood	6
B	¾"	1½"	4½"	redwood	4
C	¾"	1½"	6½"	redwood	2
D	¾"	1"	9½"	redwood	2
E	¾"	1½"	4½"	redwood	2
F*	¾"	3"	8"	redwood	1
G*	¾"	4¼"	6"	redwood	1
H*	¾"	9¾"	8½"	redwood	1
I*	¾"	5⅞"	7"	redwood	1
J*	¾"	5⅞"	7"	redwood	1
K	⅛"	4 7/16"	7 7/16"	acrylic	2
L	⅛"	6 7/16"	7 7/16"	acrylic	1

*Some parts are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: ⅛" bronze brazing rod (4 pieces 9" long, 2 pieces 8" long, 4 pieces 6" long) from your local auto parts store or welding shop, #8×1½" roundhead wood screws, 1" brads, 1½" brads, glazier's push points, wood filler, finish





chuck of our hand drill, and use this as a "bit" to drill the pilot holes. When you're done drilling, just throw the nail away.)

FINISHING TOUCHES AND INSTALLATION

1 Set all nails and fill the holes. Sand the completed lantern. If you want to prevent the redwood from graying with age, apply an exterior finish or clear waterproofing.

2 Cut the bronze brazing rods to size, as indicated in the supplies list. With a locking-grip pliers or a metal vise, bend ½" of each rod end at a 90° angle. Using the bent rods as guides, mark the location of the mounting holes on the carcass (see the Exploded-View Drawing for positioning the rods). With a drill and an ⅛" bit, drill the mounting holes ½" deep. Put a drop of epoxy in each hole and install the rods.

3 Using the table saw and a sharp blade, preferably carbide tipped, cut the ⅛"-acrylic panels (K, L) to size. Install glazier's push points to hold the acrylic panels in the rabbets.

4 Clamp the mounting frame (D-E) inside the lantern. Drill ⅛" pilot holes through the lantern and into the mounting frame. Remove the mounting frame for the lantern. Drill ⅛" pilot holes through the frame, and attach it to the siding over the light fixture. Now, fasten the lantern to the mounting frame, switch on the lights, and step back and admire your work.

Project Design: David Ashe, Workshop Blueprint Co.
Photographs: Hopkins Associates
Illustrations: Bill Zaun; Randall Foshee

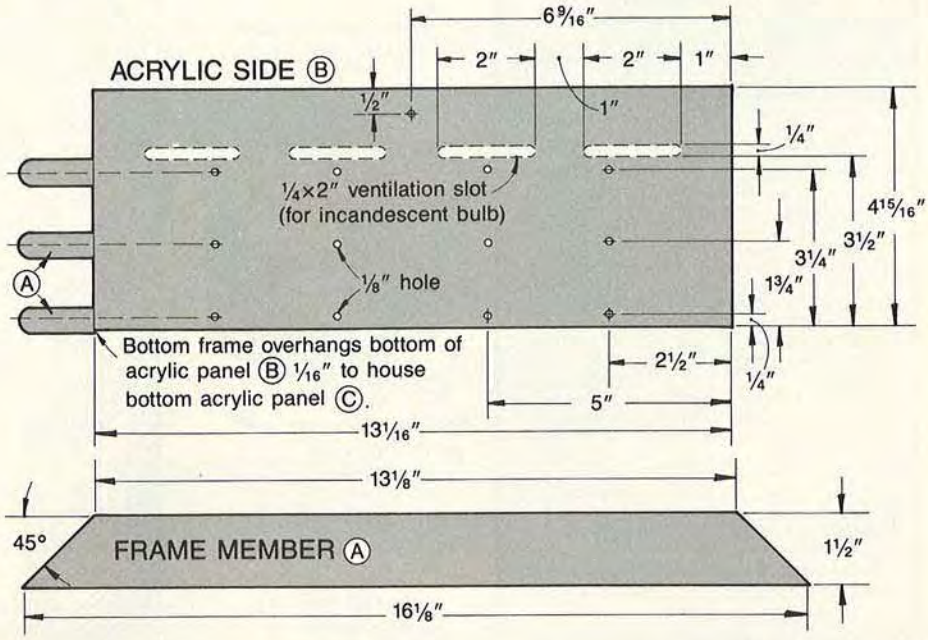
Walnut Ceiling Fixture

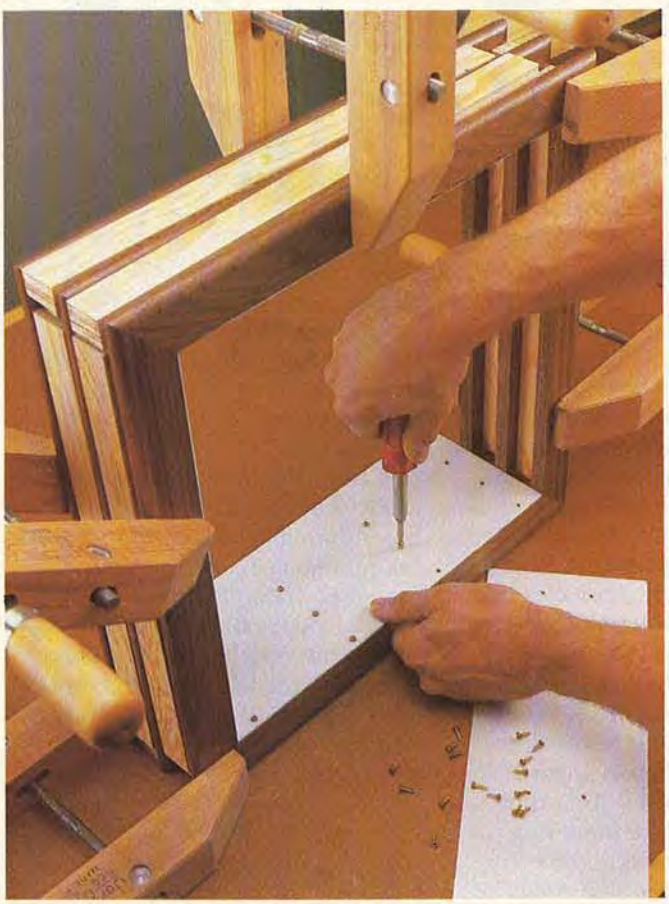
Continued from page 59

the panels to the finished size as indicated in the Bill of Materials. (Acrylic chips slightly when sawn, and a power sander tends to melt the edges. That's why we cut the panels slightly oversized and used a sanding block.)

2 Referring to the Acrylic-Side Drawing as a guide, mark the location of the screw holes that you will use to fasten the acrylic to the walnut frames. (We used a grease pencil so we wouldn't mar or stain the acrylic.) With a sharp brad-point bit, drill the ⅛" holes.

3 From ¾" scrap, cut eight 1×13" spacers. Lay one of the frame assemblies on a flat surface, and set four spacers on top of it. Stack the

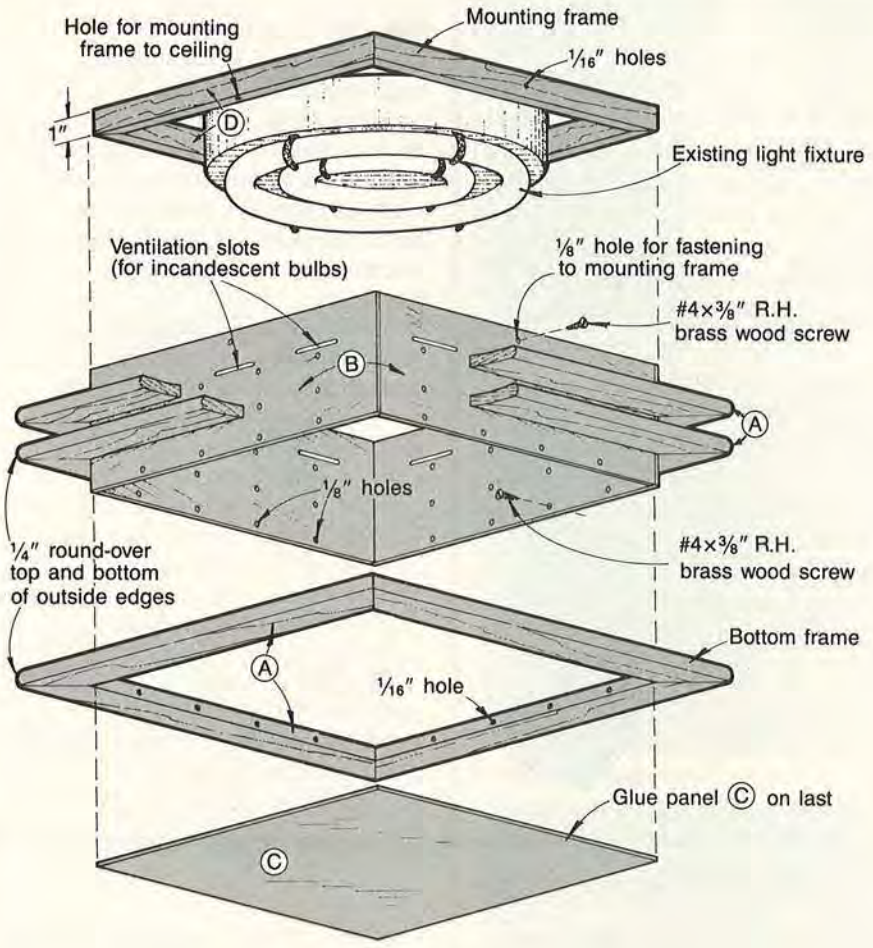




Bill of Materials					
Part	Finished Size*			Material	Qty.
	T	W	L		
A*	½"	1½"	16⅛"	walnut	12
B*	1/16"	4 15/16"	13 1/16"	acrylic	4
C*	1/16"	13⅛"	13⅛"	acrylic	1
D	½"	1"	13"	walnut	4

*Some parts are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: #4×⅜" roundhead brass wood screws, finish, solvent for cementing acrylic (available at stores selling acrylic) or epoxy, screws or toggle bolts to attach mounting frame to the ceiling



additional frames and spacers atop the first, and clamp the entire assembly together as shown in the photo, *far left*.

One at a time, position and screw the side panels (B) to the frames as shown in the photo. Position the acrylic panels to leave 1/16" of the bottom frame exposed to accommodate the bottom panel (C), as shown in the Acrylic-Side Drawing.

4 Cut the bottom acrylic panel (C) slightly oversized and hand-sand the edges for a snug fit inside the bottom frame. Once it fits correctly, use masking tape to secure it in place. Tape the entire length of all four edges of the bottom panel to the bottom frame. This will hold the pieces tightly together for fusing with the acrylic solvent in the next step and prevent the solvent from seeping through.

5 To bond the bottom panel in place, apply acrylic solvent with a syringe to the mating edges, as shown in the photo, *left*. (The solvent temporarily melts the acrylic, fusing the adjoining edges. Beware of drips, which create small depressions in the acrylic. While we used the solvent, epoxy would also work.) Wait about 15 minutes before removing the tape from the acrylic panel and walnut frame.

6 Rip and miter-cut the mounting-frame members (D) to size as listed in the Bill of Materials. Glue and clamp the mounting frame together, checking for square. (We again used the four miter clamps to hold the frame pieces together.)

7 Sand and, if necessary, plane the mounting-frame joints flush and check for a good fit inside the cover-up. (The mounting frame should fit inside the cover-up without forcing the acrylic apart. Our mounting frame was a bit too large to fit inside the cover-up. We set the jointer for a very shallow cut and jointed the frame to the correct size.) Mark and drill the holes for attaching the cover-up to the mounting frame; then mark and drill the holes for fastening the mounting frame to the ceiling.

8 Using screws (if you can hit ceiling joists) or toggle bolts (for drywall), fasten the mounting frame to the ceiling. Attach the cover-up to the mounting frame with #4×⅜" roundhead wood screws. (The walnut and acrylic cover-up can be easily taken off the mounting frame by loosening both #4 screws to replace light bulbs or for cleaning.) Stand back, flip the switch, and enjoy a revitalized light that didn't cost an arm and a leg.

Project Design: James Downing
Photographs: Hopkins Associates
Illustrations: Bill Zaun; Randall Foshee

4 THE MULTI-MACHINE, PART II GREAT ACCESSORIES

Print this article

In the February, 1986 issue of *WOOD* (p. 40), we presented the plans for our amazing multi-machine. The multi-machine's variable speeds and arbor shaft adapt to a host of workshop tasks. Add the sanding table, chuck, sharpening stones, and guards described here, and you've created your own mini-shop in one versatile homemade tool.

P.S. If you missed the article in our February issue, write us at 1716 Locust St., Des Moines, IA 50336—we'll see that you receive a copy of the multi-machine plans.

Vertical-table drum sander

Simplify sanding of concave surfaces with our variable-speed multi-machine and this detachable sanding table and drum. Mounted to the cabinet, the sanding table provides a firm base for sanding and supports the piece being sanded square (90°) with the sanding drum.

1 Lay out the 16″-diameter circle on a piece of particleboard to form the sanding table (A). Using the same centerpoint, mark a 3″ diameter hole in the center of the circle. Cut along both marks to shape the table. Sand cut edges smooth.
2 Apply plastic laminate to both faces of A. Trim the edges of the laminate flush. Drill a hole through to the center hole on both sides; then trim the laminate flush.
3 Cut two pieces of ¾″ particleboard to 8×11″. Glue and clamp them together with the edges flush. Using the dimensions in the Exploded-View Drawing, lay out and mark the shape of the supports (B). (The radiuses match those of A, and the 12° bevels match those of the cabinet sides.) Cut B to shape.
4 Clamp the support (B) onto the sanding table. Drill pilot holes, and fasten the two together with four #8×2″ wood screws.
5 Drill two ⅜″ holes through the cabinet side, where dimensioned in the drawing.
6 Mount the sanding drum onto the right-hand threaded end of the shaft. Center the sanding table (A, B) over the sanding drum. From the inside of the cabinet, transfer the location of the two ⅜″ holes already drilled in the cabinet side onto the sanding table. Drill the two ⅜″ holes through the table.
7 Mask the laminate and paint the exposed particleboard to match the cabinet. Let the paint dry. Fasten the sanding table to the cabinet with two ⅜×3″ flathead machine screws, and two ⅜″ T-nuts on the inside of the cabinet.

Wet-sharpening wheel

This nifty attachment allows you to put a sharp edge on chisels, plane irons, and other cutting tools quickly—without fear of ruining the temper of the steel. Just set your multi-machine on its lowest speed, and add water to the plastic trough to keep the steel cool while the abrasive wheel is doing its work.

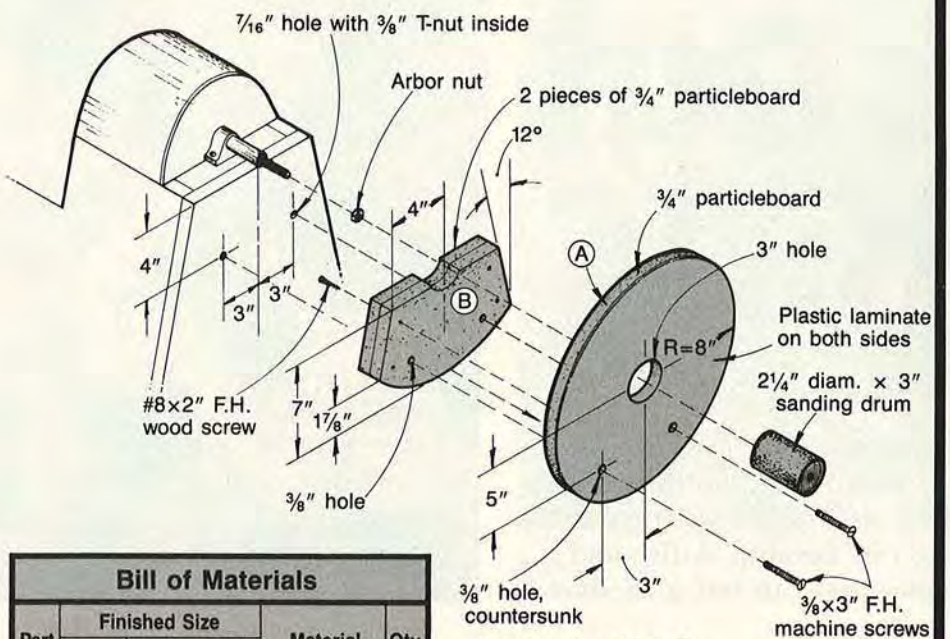
1 Using the Side-View Drawing as a guide, mark the shape of the main support (A). Cut the support to shape. Drill the two ¼″ holes for the tool rest supports (C) and drill the 1″ hole for the arbor shaft. Cut the two supports (B) to size and glue and clamp them to the back side of the main support.
2 To make the tool rests (C), start by bevel-ripping a piece of ¾″ pine 2½″ wide and 10″ long. Round-over the opposite edges, and cut the two C's to length. Drill a ¼″ hole lengthwise through each. The tool rests allow you to stand in front of the cabinet and sharpen with the wheel turning towards you or stand behind it and sharpen with the wheel turning away from you.
3 Using a tin snips, cut a piece of sheet metal (D) to the size listed in the Bill of Materials. Fold over the top and bottom edges as shown in the drawings. Bend the bottom to hold and support the water tray.
4 Paint parts A, B, and C. Fasten the tool rests and sheet metal (D) to the main support, and slip this assembly (A-B-C-D) over the arbor shaft. Drill a 5/16″ hole down through each B and the top of the cabinet. Attach the assembly to the cabinet with two ¼×1½″ machine screws and ¼″ T-nuts.
5 Fasten the sharpening wheel to the arbor shaft, and attach the water tray to the main support. We epoxied a spacer strip (E) to the water tray to hold it level. Fill the tray, soak the stone, and you're ready to sharpen.

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	¾″	33¾″	8″	pine	1
B	¾″	1⅛″	1½″	pine	2
C	¾″	1½″	2½″	pine	2
D	20 gauge	2″	8¼″	sheet metal	1
E	¼″	¾″	6″	pine	1

Supplies: 2—¼×1½″ roundhead machine screws, 2—¼″ T-nuts, 2—¼″ wing nuts, 2—¼″ lock washers, 4—¼″ flat washers, 3—#6×½″ sheet metal screws, 2—¼×3½″ roundhead machine screws, 1″ wide × 6″ diameter sharpening wheel (fine grit)

THAT ADD VERSATILITY

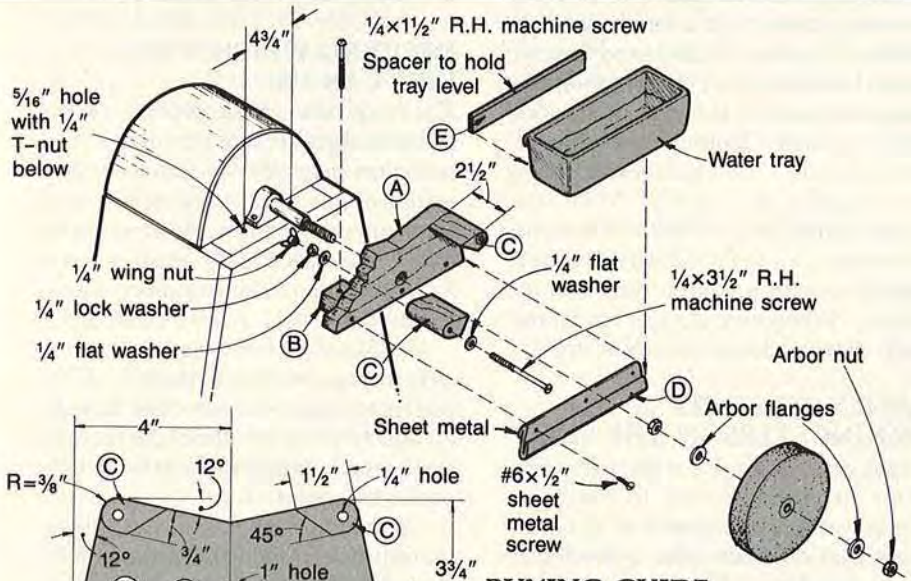


Bill of Materials					
Part	Finished Size T	W	L	Material	Qty.
A	3/4"	16" diam.		particleboard	1
B	3/4"	7"	10 3/8"	particleboard	2

Supplies: plastic laminate, paint, 4—#8x2" flathead wood screws, 2—3/8x3" flathead machine screws, contact cement

BUYING GUIDE

● ***Sanding drum.*** 2 1/4" diameter, 3" face, for 1/2-20 threaded ends. Sears catalog no. 9GT25246, $9.49. Sanding sleeves: 9GT2522, fine grit; 9GT25222, medium grit; 9GT25223, coarse grit; $1.29 each from Sears.

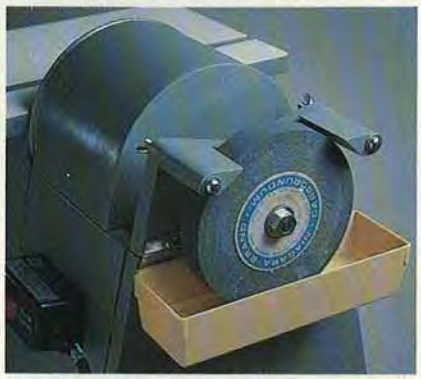


BUYING GUIDE

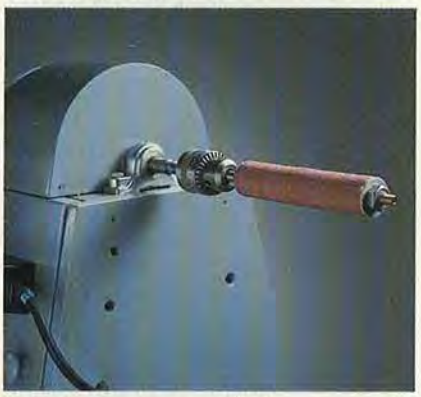
● ***Water tray.*** Our tray is a Rubbermaid "Instant Drawer Organizer," item no. 2915. We bought it at a grocery store; it's usually available wherever Rubbermaid products are sold.

Continued on page 80

Vertical-table drum sander



Wet-sharpening wheel

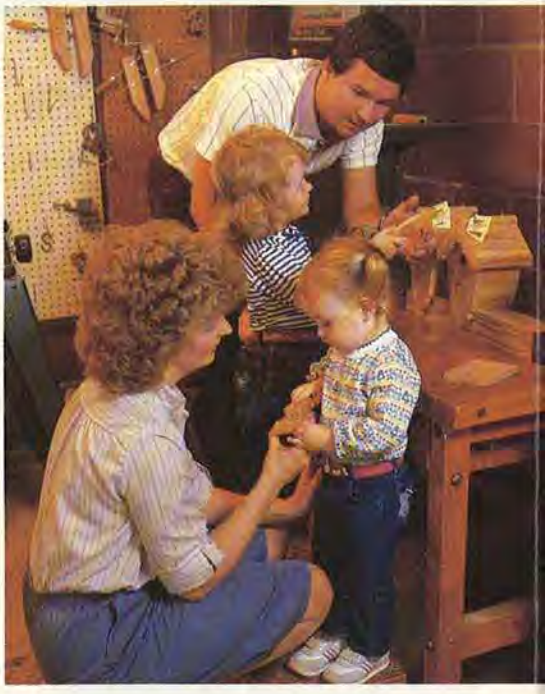


Drill-chuck attachment

Grinding wheel and guard

Print this article

Time Out for Kids



What do woodworkers and kids have in common? They're both crazy about building things with wood. And you know something else? With your guidance and encouragement, a youngster can develop skills—and a very special relationship with you—that can last a lifetime.

Jim Woodruff, a retired Air Force colonel living in Arvada, Colo., firmly believes in working with kids, as his grandfather did. "If it hadn't been for his interest in a darn ornery kid—letting me work in the shop—I could have ended up in trouble," Jim says. "I was orphaned and hated the world until he took me in and built up my confidence."

Because his service career kept him moving around, Jim's own kids grew up before he could set up a permanent shop. But now, Jim's six grandchildren often congregate in his double-garage workshop. They range in age from 4 to 10, and he's sold on the idea.

Other child-oriented woodworkers we talked to are just as positive as Jim regarding children in the shop. They told us about the special approaches they use, and the benefits that result.

WHAT WOODWORKING TEACHES A CHILD

Besides the confidence that comes from showing a youngster how to use his hands as well as his head, there are other advantages: nurturing their creativity, a sense of accomplishment, patience, and persistence.

"They find a whole new direction," comments Chicagoan Joe Veracka, a national demonstrator for Black & Decker's woodworking tools. Joe has guided kids through projects for the last dozen years. "It changes their lives when they end up being excellent craftspersons instead of klutzes."

Mike McPherson, who works in Des Moines' public schools, has a woodworking business as a family sideline. Mike, his wife, his dad, and his two pre-school daughters often spend evenings and weekends in the shop working on their "Home Tweet Home" wren houses. "Our girls see us having fun together as a family," Mike says.

In Tempe, Ariz., Paul McClure has often seen his own and his foster kids' reaction to an accomplishment in the shop. "When they can say 'I did it myself' their pride just bursts forth."

WHEN TO START YOUNGSTERS IN THE SHOP

Ages 6 through 12 seem the prime time to introduce kids to the workshop, yet Jim Woodruff's most enthusiastic little woodworker is his 3-year-old grandson, Chad. And Mike McPherson's daughters Evie, 4½, and Christie, 3, have their own workbench amidst the activity where they sand wood and pound nails.

Teens present more of a challenge, mainly because they have so many outside interests. Still, a woodworking interest fostered earlier probably will continue. Paul McClure's children—son Sean, 13, daughters Angie, 14, and Tess, 17—regularly turn out projects which include elaborate chessboards and marquetry from exotic woods.

DECIDING WHICH TOOLS KIDS CAN USE

The tools kids can use depends on the individual child's maturity level. Preschoolers may not need tools at all—water-soluble glue, wood scraps, and sandpaper will be fine. Starting about age 7, they can usually manage some hand tools, such as hammers, pliers, hand planes, and a small twist drill.

Jim Woodruff hesitates to let youngsters this age work with sharp tools; he prefers to make necessary cuts himself. At age 10 or 11 he introduces them to the portable jigsaw, which he feels is about the safest.

Graduating kids to power tools requires some individualized judgment. Paul McClure looks at the child's strength, height, and maturity. His son used the lathe at 8 years, but couldn't use a router until he was age 13. Joe Veracka has found that kids from 12 to 15 might be old enough for the

Above—**Paul McClure, Tempe, Ariz.: "If my kids finish a project, I pay for materials. If not, they pay."**

Left—**Mike McPherson, Des Moines, Ia.: "We have a little work area just for the girls where they can watch us and we watch them."**

Right—**Jim Woodruff, Arvada, Colo.: "I always answer a question with a question—they learn to think."**

radial-arm saw, band saw, or drill press.

"Some kids at 10 are more mature than others at 16," Joe says. "Even then, they have to be taught respect. I tell them 'These tools can bite you, and you can't bite them back!' "

SUREFIRE TIPS FOR WORKING WITH KIDS IN THE SHOP

Many youngsters have a short attention span, easily become discouraged, or rebel at being told exactly what to do. That's why it takes a special sensitivity to work with them. Our woodworkers shared these suggestions:

- **Make kids comfortable in your shop.** Paul McClure and Mike McPherson assembled pint-sized workbenches. But just a special space on your workbench will do.
- **Don't push.** Forcing kids into a project takes the fun out—fast. If kids get bored, let them take a break.
- **Encourage originality.** Should they insist on copying a design, have them alter it so it becomes their own.
- **Ask for drawings.** Drawing out what they want to build develops communication and thinking skills.
- **Let kids set the pace.** Hurrying kids turns them off. "Work with them as an equal, not just as a teacher," suggests Joe Veracka.
- **Avoid criticizing.** Help youngsters see their mistakes as learning opportunities—not as excuses for quitting. "If they say it's a table, then, by golly, it's a table," Jim Woodruff advises.
- **Make sure they complete projects.** Kids, like adults, take pride in accomplishment. That means seeing a project through to the finish, even if it's not perfectly executed. Paul McClure handles it this way: He pays for all materials in projects his kids complete; if they leave something half done, they pay for it themselves.

WOODWORKING HELPS KIDS FIND THEMSELVES

Along with the very special feeling you'll get from working with youngsters, you'll watch them develop their own aptitudes and abilities as they design and build with wood. And as kids discover what they can do, they build confidence in their own woodworking abilities.

"Kids not only feel good about themselves, they learn to appreciate others' work," Jim Woodruff observes.

If you're not yet involved with a son, daughter, grandson, granddaughter, or the kid down the street needing attention, invite them in next time! You'll both grow from the experience.

5 SAFETY RULES FOR KIDS

In the shop, kids require guidelines like these from Jim Woodruff:

1. Tools are on loan for their proper use only. "Tools aren't toys, and they don't argue over them."

2. No throwing, running, or rapid movement allowed in the shop. "Rough-housing belongs outside, but no tools go out the shop door."

3. Don't touch or turn switches. "Switches are off limits, but I show them how power tools work, their danger, and where it's safe to stand when I'm using them."

4. Follow the code words TAKE IT EASY. "If they work too fast or rough, I remind them what the code words are."

5. Don't use new tools without asking. "I have to make sure they work properly first."

Paul McClure offers some additional power-tool rules. In his shop, kids under 16 can't use power tools unless supervised. Eye protection is required, as are short sleeves and tucked-in shirttails.

Produced by Peter J. Stephano with Gene Schnaser
Photographs: Bob Calmer; Ed Sargeant; Steve Newnum

SIMPLY SPECIAL WREN HOUSE

Being parents ourselves, we tried to find just the right projects for this special Family Woodworking Section. For instance, you and your youngster can tackle this redwood birdhouse in just a couple of hours. Build it soon, and watch its feathered inhabitants set up housekeeping this spring.

START BY CUTTING THE PIECES

1 Form the front and rear panels (A), by ripping a redwood board to 5¾" wide. Then, crosscut two pieces to 5¾" long.

2 Transfer the shape of the front panel (A) onto the redwood, using the gridded Front Half-View Drawing as a guide. Using a jigsaw or band saw, cut it to shape as shown in the photo, *below*. Sand all the edges smooth. With the front panel as a template, trace the outline onto the rear panel, and cut it to shape.

3 Clamp the front panel firmly in a vise and bore a 1" entrance hole in it as shown in the photo, *above right*. Then drill three ¼" ventilation holes in the rear panel. Place a scrap board beneath each panel when drilling to prevent chipout.

4 Cut the bottom panels (B, C) and roof panels (D, E) to size.

NOW, PUT THE HOUSE TOGETHER

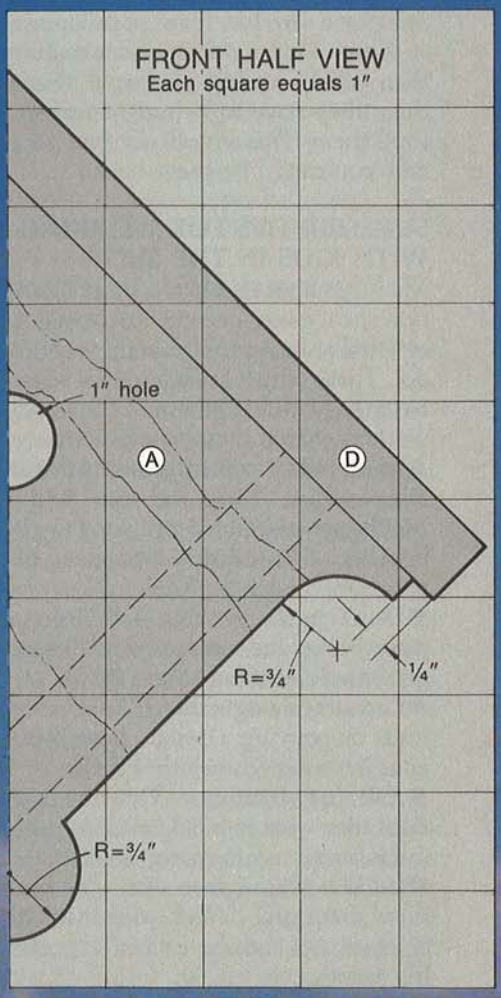
1 Clamp the bottom panels (B, C) together as shown in the Exploded-View Drawing, and drill two ⅛" pilot holes through B and ½" into C. Then fasten the two pieces together with two #8 × 1¼" flathead wood screws. The redwood is soft enough that the screws will countersink themselves for a flush fit. Remove the clamps.

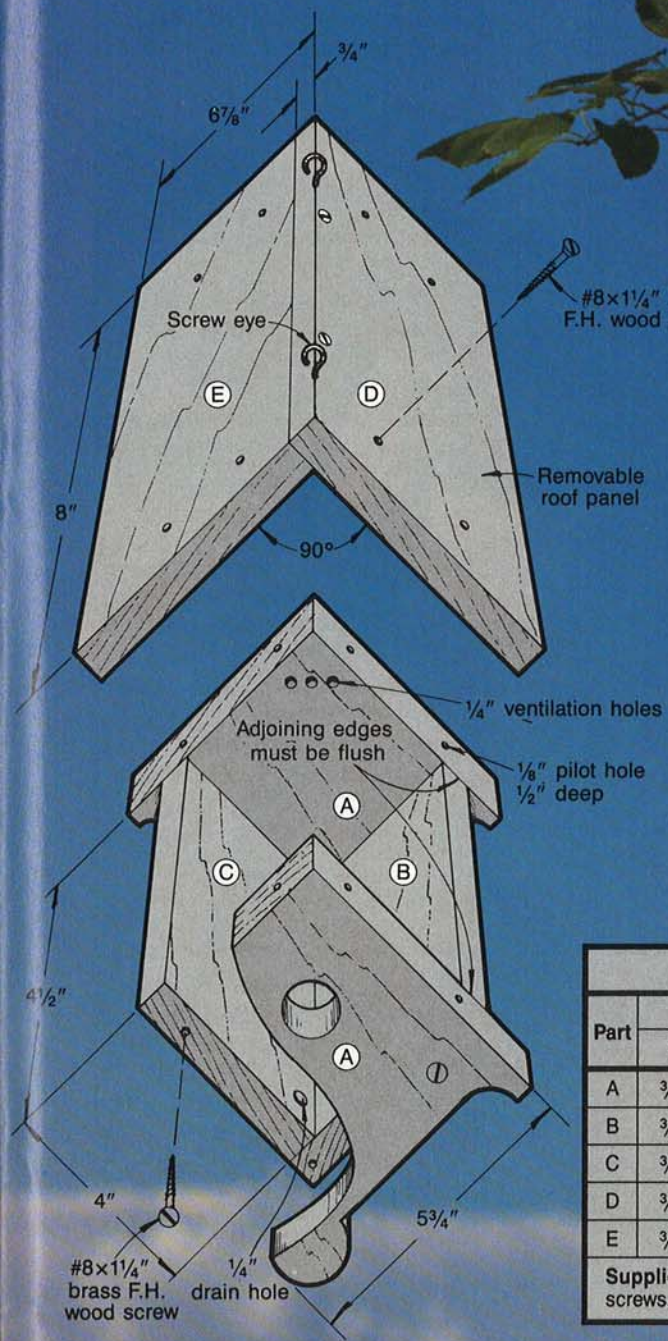
2 Drill a ¼" drain hole at the bottom edge of C, as shown in the Exploded-View Drawing.

3 Clamp the roof panels (D, E) together. Drill ⅛" pilot holes, and screw the parts together, as indicated in Step 1.

4 Clamp the B–C assembly between the front and rear panels, keeping the top edges of B and C flush with the edges of both A's. Drill pilot holes, and screw the

Note: We chose redwood for this project, but you also could use pine or western red cedar. Do not apply paint or preservatives; wrens prefer to live in homes with no finish.



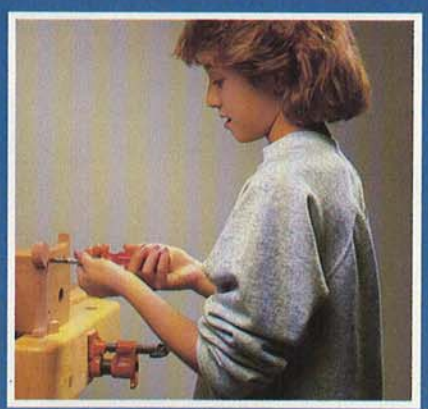


Note: Wrens prefer low branches with the opening facing away from prevailing winds. And be sure you locate the house in an area that is partially lit, yet out of the hot afternoon sun.

Bill of Materials

Part	Finished Size			Material	Qty.
	T	W	L		
A	3/4"	5 3/4"	5 3/4"	redwood	2
B	3/4"	4 3/4"	4 1/2"	redwood	1
C	3/4"	4"	4 1/2"	redwood	1
D	3/4"	6 7/8"	8"	redwood	1
E	3/4"	6 1/8"	8"	redwood	1

Supplies: #8×1 1/4" brass flathead wood screws, 2—1" screw eyes



assembly together as shown in the photo, *above*.

5 Position and clamp the roof (D, E) to the house, making sure that it overhangs the front and back panels equally. Drill pilot holes, and screw the roof to the rest of the house. By removing the six screws from D, you can lift this piece off and clean out old nests.

6 Sand the entire wren house smooth. Install two screw eyes for hanging. Hang from a branch, and post a vacancy sign.

Project Design: James Downing
Photographs: Hopkins Associates
Illustrations: Bill Zaun; Kim Downing

Print this article

Happy THE RED BARON, JR.

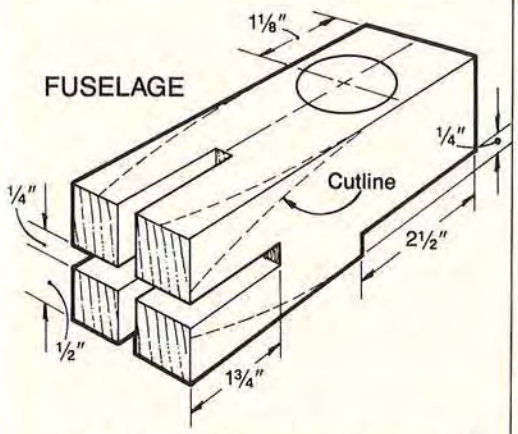
With your supervision, a youngster probably can handle most of the layout, cutting, and assembly of this high-flyin' project—depending, of course, on his or her skill level and age.

Landings TOY AIRPLANE

FIRST YOU MAKE THE FUSELAGE, WING, AND STABILIZER

1 Rip a piece of pine to 1½" square. Measure 5¼" from one end and cut the fuselage (A) to length.

2 Using the Full-Sized Patterns on page 75 and the drawing, *below*,



for reference, lay out and mark the notches needed to hold the elevator (B) and the rudder (C). Do the same for the rabbet that will accept the wing. Then, using a band saw or a handsaw, chisel, and mallet, cut the notches to size. And with a band saw or a dado blade mounted in your radial-arm or table saw, cut the rabbet in the underside of the fuselage.

3 Lay out the location of the cockpit, again using the drawing, *above*, as reference. Drill a 1¼" hole ⅜" deep where the two lines intersect. Now, drill a 1" hole through the center of the first hole and through the entire thickness of the fuselage, using a backer board below the piece being drilled to prevent chipout.

4 Draw diagonal lines from corner to corner on the front of the fuselage to mark the center point for the prop shaft. With a ¼" bit, drill ½" deep into the front of the fuselage (A).

5 Using the pattern on page 75 as a guide, mark the taper on the tail end of the fuselage. Cut the taper to shape with a band saw or jigsaw. Now, round-over the square edges the length of the fuselage with a block plane or wood rasp.

6 Using tracing paper, transfer the shape of the rudder (B), elevator (C), and wing (D) onto ¼" stock. Remember to trace the notches and the strut holes. Cut the parts to shape, then cut the notches in B and C. (We resawed ¾" pine and walnut to form the ¼" thick stock.)

7 To form the strut holes, drill two ¼" holes side by side. Cut the rectangular holes to shape with a mallet and chisel as shown in the photo, *below*.

8 Sand all curves smooth, and sand a slight chamfer on any sharp edges. Test the fit of B and C into the notches in the fuselage. (Some filing and sanding may be necessary for a good fit.)

NOW YOU CUT THE PROPELLER PARTS

1 Using a circle cutter on the drill press, cut the motor (E) and nose cone (F) to shape. Sand a slight round-over on the front edge of both. [To sand the round-over and other round parts smooth, we mounted the parts (E, F, I) on ¼" dowel stock. Then we mounted the dowel in the chuck on our drill press, turned the drill on at a low speed, and sanded the parts smooth.]

2 Using tracing paper, transfer the shape of the propeller (G) to ¼" stock, and cut to shape. Drill a 5/16" hole through the center of the prop, and ¼" holes through the center of the motor and nose cone.

3 Cut the prop shaft to length (1¾") from ¼" dowel stock.

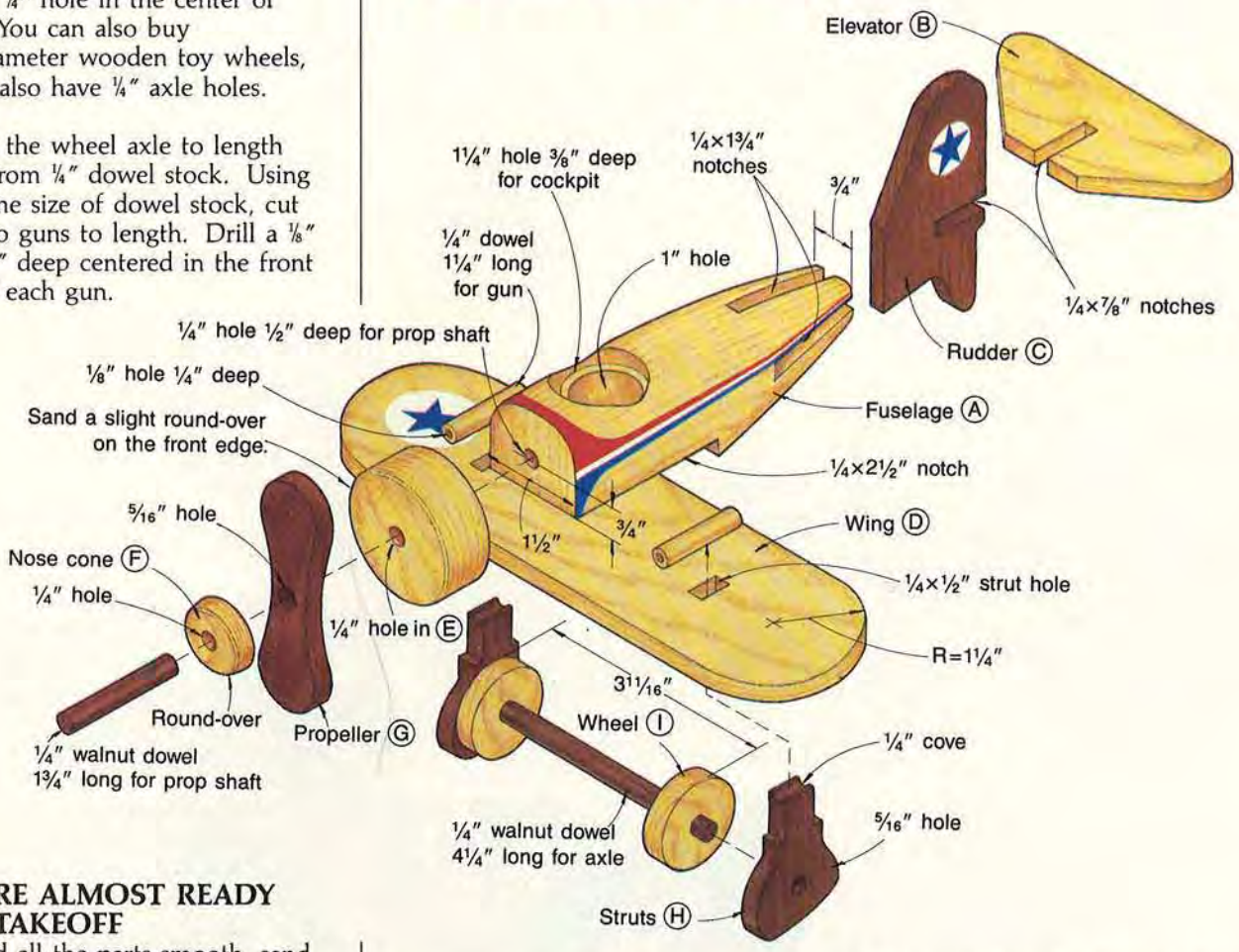
HERE'S HOW TO GUARANTEE A SMOOTH LANDING

1 Once again using the Full-Sized Patterns, transfer the shape of both struts (H) onto ¼" stock. Cut the struts to shape, stick them together with double-faced tape, and drill a 5/16" hole through both for the axles. Check for a tight fit of the struts through the strut holes in the wings, and sand if necessary.

2 Use a small-diameter rasp or a ¼" dowel with sandpaper wrapped around it to form the groove for the guns on the top end of the struts as shown in the photo, *below*.

Continued

TOY AIRPLANE



3 Using a circle cutter, cut the two wheels (I) to size (1¼" diameter). Drill a ¼" hole in the center of each. You can also buy 1¼"-diameter wooden toy wheels, which also have ¼" axle holes.

4 Cut the wheel axle to length (4¼") from ¼" dowel stock. Using the same size of dowel stock, cut the two guns to length. Drill a ⅛" hole ¼" deep centered in the front end of each gun.

YOU'RE ALMOST READY FOR TAKEOFF

1 Sand all the parts smooth, sand all sharp edges. (While most projects are sanded after completion, it is much easier to sand this one before gluing. It takes more time to try and sand around all the parts, especially the moving ones, later.)

2 Glue the rudder, then the elevator in the tail end of the fuselage. Glue and clamp the wing to the underside of the fuselage.

3 Attach the motor (E), propeller (G), and then the nose cone (F) to the fuselage (A) with the ¼"-walnut dowel. Glue the motor to the body, and glue the nose cone to the dowel. (Be careful not to get any glue on the prop so that it can spin freely on the ¼" dowel.)

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	1½"	1½"	5¼"	pine	1
B	¼"	1¾"	4⅛"	pine	1
C	¼"	1¾"	3½"	walnut	1
D	¼"	2½"	8½"	pine	1
E	¾"	2" diam.		pine	1
F	¼"	1" diam.		pine	1
G	¼"	1"	3½"	walnut	1
H	¼"	1½"	2"	walnut	2
I	¼"	1¼" diam.		pine	2

Supplies: ¼" walnut dowel, ¼" birch dowel, tung oil, pilot figure (you can use a Fisher-Price Air Pilot or order a wood "person" from most toy-part catalogs), adhesive-backed decals and colored tape

4 Glue the wheels (I) in place on the axle. After the glue dries, fit, but don't glue, the struts (H) onto the axle. Position and glue the struts in place through the wings. Finally, glue the guns into the coves on top of the struts.

5 If you want your airplane to look exactly like ours, attach colored tape and decals. (We found the colored tape at a local hardware store and decals at a hobby shop.)

6 Finish the entire airplane (we used several coats of tung oil), and you're ready to fly.

Project Design: Kim Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

Full-Sized Patterns on page 75

Full Size Plans

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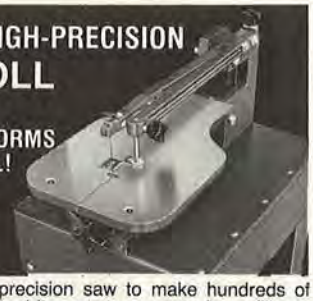

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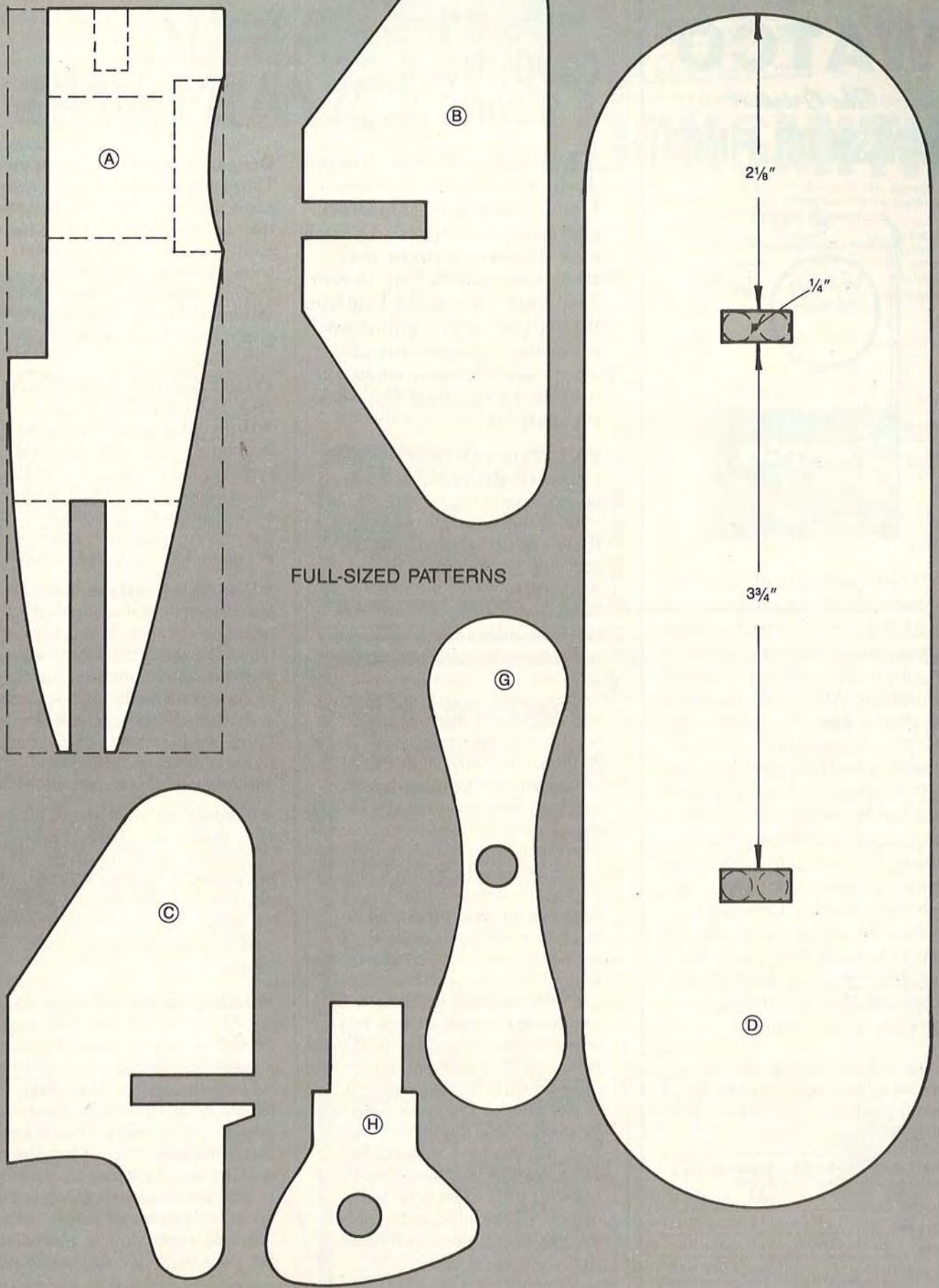

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TIPS ON CHOOSING & BUYING PLASTIC LAMINATES

Plastic laminate has changed its face for the Eighties. From pinstripes to geometrics and metal look-alikes to pastels with the color solid to the core, your choices have never been more varied. To help you through the selection process, following is a rundown of what's available and what you need to know about this versatile material.

PICK THE LOOK YOU LIKE

Despite tough-guy characteristics, plastic laminates have often trailed other materials as the choice when it came to up-to-date looks. But wait just a minute. Something new has been added to the mix.

Solid-to-the-core surfacing materials: Solid-core surfacing materials eliminate the unsightly, dark seam lines you have with standard laminates. Scratches and dents show up less, too, because the dings cut into a backing of the same color. With these solids, you can build up layers of varying colors for some spectacular design effects. Trade names include products such as Formica's Color-Core®, Wilsonart's Solicor®, and Pioneer Plastics' MelCor™.

Metal laminates: Anodized or epoxy-coated aluminum and urethane-coated copper take on the look of bronze, gold, brass, steel, and other metals. Finishing touches can produce a look as slick as a mirror or as soft as a textured brush effect. With embossing, the metals offer a variety of designs.

Better mimics: Woodworkers will be pleased that the plastics that have masqueraded as wood look more like the real thing, thanks to improvements in printing techniques. Other look-alikes—linens, leathers, canes, slate, marble, and stone look good, too.

Designer patterns and textures: Thus far, you won't find a Calvin Klein laminate. You may believe that designer names can't be far away, though, with the current array of patterns and textures—pinstripes, geometric patterns, graphs, embossed surfaces, and patterns that give a three-dimensional quality.

WHAT GRADE LAMINATE DO YOU NEED?

● **Horizontal, general-purpose laminates** stand up to the most pressure, impact, and wear with a thickness of roughly 1/16". As the name implies, these laminates make the best choice for flat surfaces such as countertops or furniture tops.

● **Vertical, general-purpose laminates** are thinner, less-costly surfacing materials at roughly 1/32" thick. They won't take the abuse of their thicker counterpart, but they work well on walls, cabinet doors, and other similar applications. Often, you can save some money by using both horizontal- and vertical-grade sheets on a project.

● **Banding, or edge strips,** give your project an edge and save you the trouble of cutting strips. Banding comes in varying widths, but one common size measures 1⅞"×12' long. Some banding is sold in foot-long strips; others, in long rolls.

● **Backing sheets** add dimensional stability to panels that aren't supported by another assembly such as a base. Ideally, the decorative plastic laminate and backing sheet should be as close in thickness as possible. The thicker the backing sheet, the greater the dimensional stability and resistance to cracking. In practice, most people cover the backs or bottoms of panels with "backing sheet," a thin, inexpensive laminate without a decorative face.

● **Cabinet liners** are less expensive than general-purpose laminates and work well inside cabinets and other casework. The liners come in limited stock colors.

● **Specialty laminates** include laminates that are fire-retardant, impervious to certain chemicals, have antistatic properties, or take more wear.

MAKING THE PURCHASE

Where to purchase: Retail outlets such as home centers and lumberyards handle only a few standard sizes and designs. But they all have samples of the various patterns, so you can order from these. The largest manufacturers have distribution centers in most states, so the shipping distance may not be far. Delivery can be as short as a day or two, though some lines may take from 10 days to two weeks. In a large city, you may be able to buy directly from the manufacturer's distribution center.

Pricing: Plastic laminates are sold by the square foot. Standard patterns and wood grains typically cost between $1 and $2 a square foot. Specialty items, such as metal or solid-core colors, may cost from just under $5 to almost $7 a square foot. Price may vary according to finish. A basic matte or satin finish generally is the least expensive; higher gloss or raised finishes may cost slightly more. And, in general, backing sheets and cabinet liners cost about half what standard patterns go for.

Sizes: Standard nominal widths include 18", 24", 30", 36", 48", and 60". Standard nominal lengths are 48", 60", 72", 96", 120", and 144". Manufacturers cut sheets slightly wider and longer than stated to allow for trimming or for cutting more than one piece from a sheet. Not all products come in all widths and lengths. More specialized products may be sold in only one size sheet.

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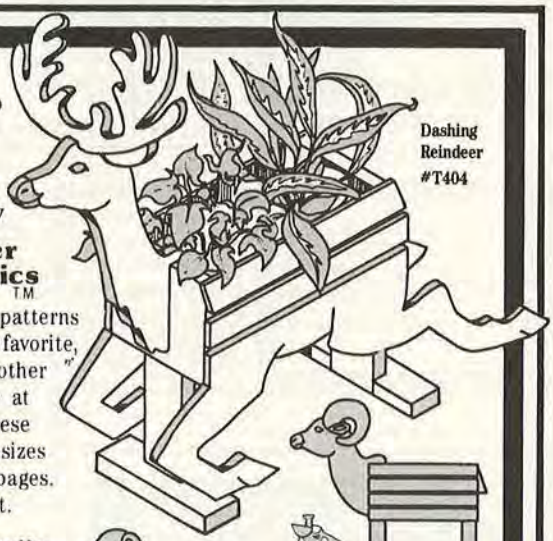
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TALKING BACK

Print this article

Continued from page 10

MAIL-ORDER SOURCE FOR GRAINGER PARTS

Several of your recent projects have included W.W. Grainger parts. Grainger is one of America's larger wholesale houses and does not sell retail, so readers may face a challenge in finding sources for these parts. *WOOD* readers who want to buy Grainger parts may do so from me, at wholesale prices (Grainger's "net cash" price). Their purchases will be shipped from their local Grainger warehouse.

Readers should send me a stamped, self-addressed, no. 10 envelope and specify the month, issue number, and page of the project they want to order the parts for. All queries should be addressed to: SBISCO, Dept. BHW, P.O. Box 479W, Hollister, CA 95024. Parts delivery normally is within 14 days of the date the order was mailed.

—Edward W. Stollery II, SBISCO, Hollister, Calif.

WHERE TO BUY BELT-BUCKLE HARDWARE

While reading "Found Wood" (October, 1985, p. 66), I wondered how many times in past years I have tripped over good wood. The spalted-maple belt buckle caught my eye in particular. I have been wanting to make my own buckles for some times. Can you help me find a source for the hardware?

—Albert Swelbar, Cadiz, Ohio

Wooden belt buckles make nifty gifts—especially when you can turn them out in a hurry. Our own Features Editor Peter Stephano made the buckle you saw in the October, 1985 issue. Buy the hardware at your local Tandy Leather store, or from their catalog. Hook and ring no. 1601 fits 1" to 1¼" buckles; no. 1602, 1½" to 1¾" buckles. Cost: 79 cents each (Texas residents add 4 cents sales tax for each buckle), plus $1.75 postage and handling per order. To order by mail, write: Tandy Leather Co., P.O. Box 2934, Dept. WM, Fort Worth, TX 76113.

OLD-TIME TOOL EXPERT NEEDED

In the December issue, the article on "The Christmas Wagon" (p. 78) mentions the felling of a tree with a one-man crosscut saw. I have somewhat restored my father's one-man crosscut saw that he used in Wisconsin until the early 1930s. It is a saw that grasps the trunk or log to be cut, applies downward pressure to the saw blade, and can be adjusted for horizontal or vertical sawing. I don't know how rare this tool is, but I would be willing to donate it to an appropriate historical society in my father's name. I would also appreciate any information your readers can supply on this unique tool.

—Kermit C. Jones, Security, Colo.

Can any of you readers help out? If so, please send your correspondence to the Letters Editor here at WOOD, and we'll pass it along to Kermit.

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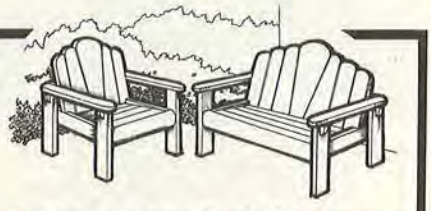

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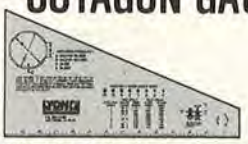

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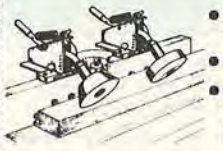

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4 GREAT ACCESSORIES

Continued from page 65

Drill-chuck attachment

Mounting a drill chuck lets you perform several more tasks on the multi-machine. (See the Buying Guide at right for a few items we used.) Be sure to wear safety goggles when using attachments!

BUYING GUIDE

- ***Drill chuck.*** Hardened steel, nickel-chrome alloy jaws. Holds bits with 5/64"- to 1/2"-diam. shanks. Fits 1/2-20 threaded shaft. Sears stock no. 9GT2980, $11.
- ***Pneumatic sanding drum.*** 1×6", in-

Grinding wheel and guard

For general-purpose sharpening or for removing lots of steel fast, you can't beat this attachment. Set your multi-machine to the proper speed, adjust the tool rest angle, position the eye shield, and let the sparks fly.

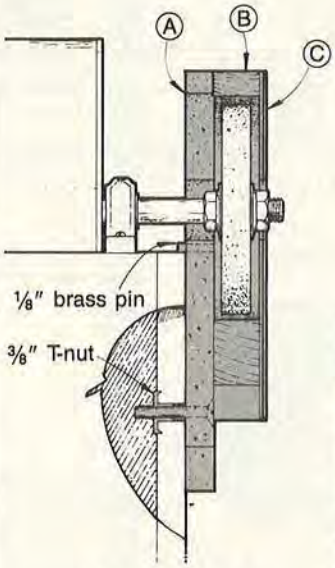
Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	3/4"	4"	12"	plywood	1
B	1 1/2"	4"	10"	pine	1
C	1/8"	4"	10"	plywood	1

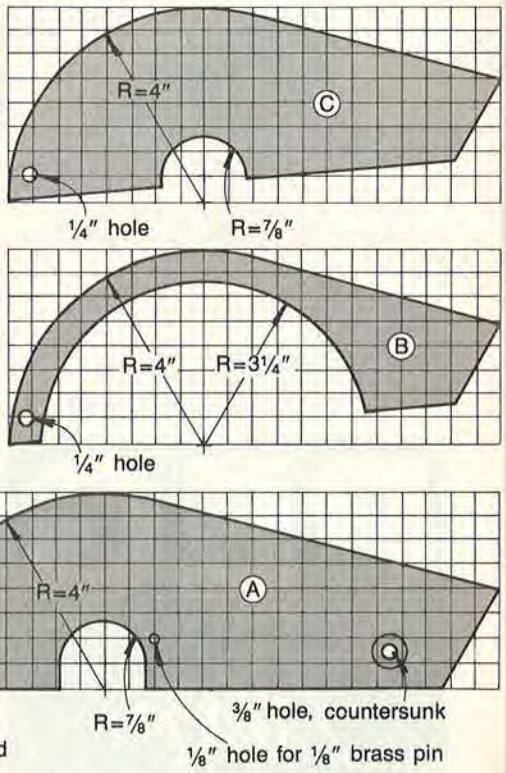
Supplies: 1—5/16" flat washer, 1—3/8"×1 1/2" flathead machine screw, 1—3/16" wing nut, 1—3/16×2 1/2" hex head machine screw, 1—5/16×1" hex head machine screw, 1—3/8" T-nut, 1—5/16" T-nut, 1—1/8"-brass pin 1" long (we bought 1/8" brass rod at a hobby shop; it's also available at welding supply shops).

1 Cut parts A, B, and C to the size listed in the Bill of Materials.

2 Using the Grid Patterns shown, transfer the shape of A, B, and C onto the appropriate stock (don't forget to mark hole positions). Then, cut the pieces (A, B, C) to shape. Clamp, but do not glue, the pieces together. Mount the grinding wheel to the arbor shaft, and test-fit the clamped-up guard over the wheel. With the guard positioned over the grinding wheel, mark the location of the 3/8" hole needed in A through the previously drilled hole in the cabinet side. Drill a 3/8" hole through A to match the hole in the cabinet. Remove the



FRONT VIEW



GRIDDED SIDE VIEWS Each square=1/2"

flatable, stock no. E-Z106, $115. Sold by North West Carving Supplies, P.O. Box 5211, Bozeman, MT 59715.

● ***Heavy-duty contour sander.*** Includes a wheel with a ½" reducer bushing, an abrasive coil, and eight brushes. Sears stock no. 9GT64861, $14.

● ***Strip 'n Sand Mini Stripper Kit.*** Kit includes five flexible wheels plus quick-change mandrel and shank. Each wheel (1×2½" diam.) has dozens of abrasive flaps. Sears stock no. 9GT25246, $17.

clamps and countersink the ⅜" hole in guard piece A.

3 Glue and clamp the pieces together. Later, sand the guard.

4 Drill a ⅛" hole through A for the brass pin. (The pin rests on top of the multi-machine's side panel as shown in the Front-View Drawing.) Cut a piece of ⅛" brass rod to 1" long, and epoxy it in the hole. (The pin should protrude at least ¼" on the cabinet side of A and should *not* protrude on the inside of the guard where it could strike the grinding wheel when in use.)

5 Notch out areas on the front sides of the guard for mounting of the plastic eye shield. Drill a ¼" hole through the notched area. Attach the eye shield to the guard and the guard itself to the multi-machine. (The eye shield should swing back and forth in the notch.)

6 Hold the tool rest against the cabinet as shown in the photo on p. 65; mark the location of its mounting hole. Drill the hole and mount the tool rest. With the machine *unplugged,* spin the wheel by hand, checking that it does not touch the guard or tool rest.

7 Remove the guard from the cabinet, and remove the eye shield from the guard. Paint the guard.

8 Reattach the eye shield to the guard, and guard to the cabinet.

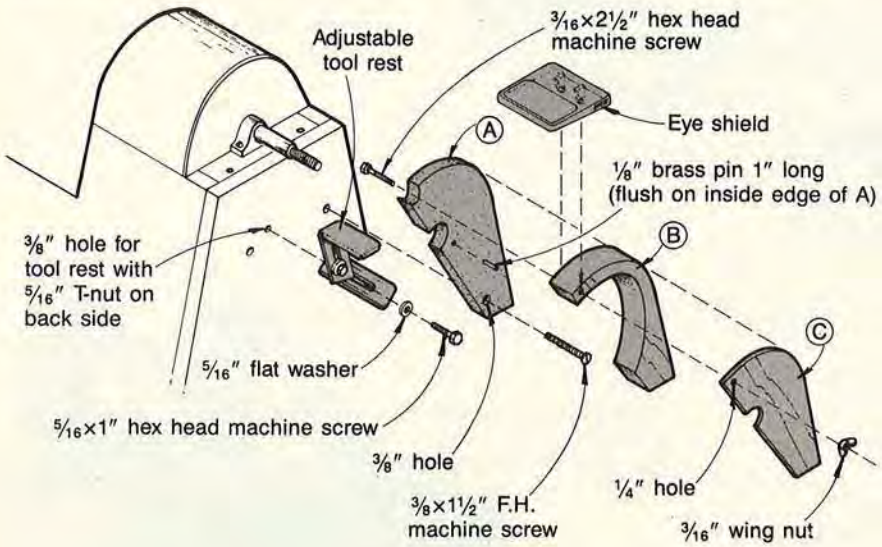
BUYING GUIDE

● ***Aluminum-oxide grinding wheels.*** 6" size fits ½" shaft. Fine, 100 grit, 6×½"—no. 9GT64319, $6.19. Medium-fine, 60 grit, 6×½"—no. 9GT64209, $6.19. Medium-coarse, 36 grit, 6×½"—no. 9GT64352, $6.19. Sears.

● ***Tool rest and arm.*** Parts from a Sears Industrial Grinder. L.H. tool rest—Sears stock no. 4656, $1.99. Tool rest arm—Sears stock no. 521935, $2.99.

● ***Eye Shield.*** From a Sears Industrial Grinder. Stock no. 4971778, $3.99.

Project Designs: James Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun



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THE NITTY-GRITTY OF SANDING

Q. *What's the normal progression of sandpaper to use for finishing a flat surface? I never seem to get as smooth a finish as I want.*

—Helen Clark, Ft. Lauderdale, Fla.

A. To prepare the surface for finishing, we advise you to start with a 60-grit garnet paper. Follow up with 80-grit, 100-grit, and 150- or 220-grit paper. After applying the first sealer coat, sand lightly with 220- or 320-grit. From that point—and until you're satisfied with the finish—use 320-grit between coats. This may sound like a lot of grits, but a truly fine finish requires elbow grease! There's no magic involved. Remember: From rough-sanding to final finishing, always use a sanding block or pad to prevent leaving any finger marks and streaking. You'll be much happier with the results.

STRAIGHT FACTS ABOUT WARP

Q. *The only board I have left to finish a project is badly warped. Is it possible to take the warp out of a board so I can still use it?*

—Dick Howard, San Diego, Calif.

A. Unfortunately, once a board has warped—even slightly—you rarely can restore it to its original shape. Even if you forced it "straight," say, by screwing it in place as the side of a cabinet, the pulling strength of the warp would probably cause the whole cabinet to rack. Unless you have enough margin to correct the distortion on the planer, the only solution is to replace the board.

However, all is not lost. Even a severely warped board is too valuable to toss on your scrap pile. Save what you can by cutting out smaller sections of the board for future projects.

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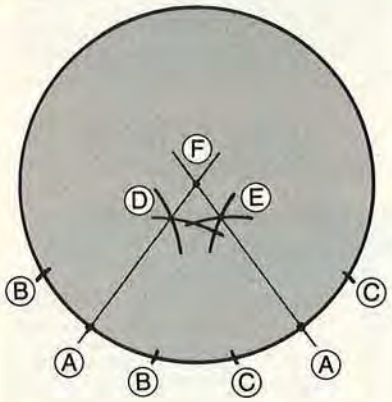
GETTING TO THE CENTER OF THINGS

Q. *I know I should remember this from high school geometry, but how do I find the exact center of a round tabletop (or any circle)?*

—R.A. Dickelman, West Des Moines, Iowa

A. Here's how it's done: From any two points (A) on the circumference of your table, use trammel points to mark equidistant points (B and C) on *both* sides of *both* starting points. Then open up the distance on your trammel points a bit, and arc from each of the second pair of points (B and C) to determine two interior points (D and E).

Use a straightedge to connect your two starting points (A) with the interior points (D and E). Now you have it: The center (F) will be the point where those two lines (A–D and A–E) meet.



GLUE TIGHT!

Q. *How much glue space should I allow for in a joint?*

—Ralph Hendrickson, Geneva, Ill.

A. In a word, none. The strength of any glued joint depends on a solid mating of the surfaces forming the joint, and the glue you use. Measuring carefully before you cut is the key to a good joint. Because white glue thickness should be only about .001" (believe it or not) after clamping the joint, white glue won't even take up the slack in a cut that's just slightly off.

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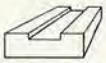
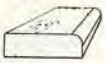


STRAIGHT BIT TWO FLUTE

PART #	DIA.	CUT LGTH.	SHK	LIST	SALE
85250M	1/4	7/8	1/4	11.80	8.85
85460M	1/4	7/8	1/2	14.90	11.15
85225	3/8	7/8	1/4	12.25	9.15
85241M	3/8	1	1/2	14.30	10.70
85227	1/2	7/8	1/4	12.70	9.50
85251M	1/2	2	1/2	17.40	13.00
85232	3/4	5/8	1/4	14.85	11.10



CORNER RD BIT TWO FLUTE

PART #	RAD.	CUT LGTH.	SHK	LIST	SALE
85294M	1/4	35/64	1/4	26.00	19.40
85296M	3/8	43/64	1/4	28.05	20.95
85594M	3/8	43/64	1/2	34.95	26.10
85297M	1/2	51/64	1/4	30.65	22.90
85595M	1/2	51/64	1/2	36.15	27.00

RABBETING BIT TWO FLUTE

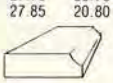
PART #	RAB.	CUT LGTH.	SHK	LIST	SALE
85218M	3/8	1/2	1/4	24.15	18.05

ROMAN OGEE BIT TWO FLUTE

PART #	RAD.	CUT LGTH.	SHK	LIST	SALE
85270M	5/32	15/32	1/4	31.80	23.75
85271M	1/4	25/32	1/4	33.95	25.35
85592M	1/4	25/32	1/2	43.15	32.20

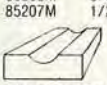
CHAMFER BIT TWO FLUTE

PART #	BEV.	CUT LGTH.	SHK	LIST	SALE
85298M	45°	5/8	1/4	27.70	20.70
85597M	45°	5/8	1/2	27.85	20.80



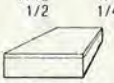
COVE BIT TWO FLUTE

PART #	DIA.	CUT LGTH.	SHK	LIST	SALE
85205M	1/4	1/2	1/4	28.95	21.60
85206M	3/8	9/16	1/4	29.05	21.70
85207M	1/2	5/8	1/4	29.95	22.35



CORE BOX BIT TWO FLUTE

PART #	DIA.	CUT LGTH.	SHK	LIST	SALE
85444M	1/4	3/8	1/4	16.20	12.10
85445M	3/8	5/16	1/4	22.45	16.75
85446M	1/2	3/8	1/4	23.05	17.20
85447M	5/8	7/16	1/4	23.05	17.20
85448M	3/4	1/2	1/4	23.70	17.70



LAMINATE TRIM BIT THREE FLUTE

PART #	DIA.	CUT LGTH.	SHK	LIST	SALE
85216	1/2	1	1/4	20.10	15.00

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10020	3/16	1/2	3.85	3.65

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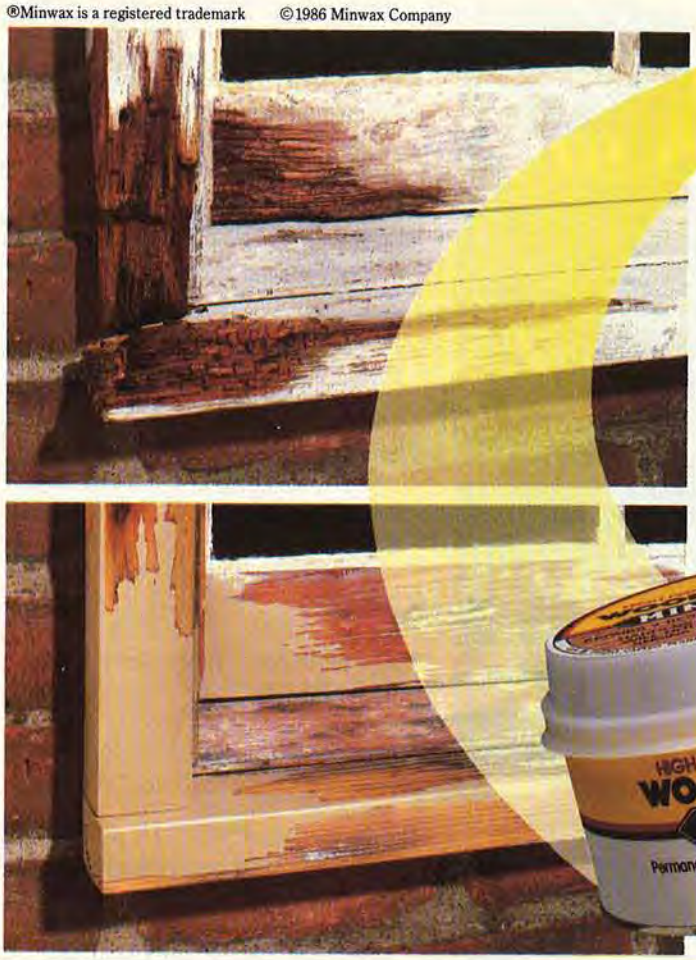

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PRODUCTS THAT PERFORM

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A box full of molding combinations

You can produce several different moldings by using varying combinations of the four router bits in this set. (We used three of the bits on our router table to make the molding shown in the photograph.) Two of the bits are carbide-tipped and two are steel; all have ¼" shanks. The set also includes a plastic case for safe storage and an instruction sheet diagramming seven moldings to get you started. *Crown Molding Bit Set (no. 21255), $40 in the 1985/86 Sears Tool Catalog and at larger Sears stores.*

Spray-on suede lining

Spray a soft touch on any project—the inside of a jewelry box, the outside of a child's toy, or the bottoms of bookends—without having to cut and paste odd-shaped pieces of felt. The starter kit includes everything necessary to cover 30 square feet of surface; brown and green fibers come with the kit, but 22 other colors are also available. An adhesive undercoat is provided. *Suede-Tex Kit (catalog no. 115), $46.50 postpaid. DonJer Products Company, 55D Alder St., Dept. W, West Babylon, NY 11704.*

The story of the boards and the bees

A traditional polishing wax made from beeswax and turpentine (the latter makes application easier), this paste goes on smoothly, dries quickly, and produces a natural shine after a light buffing. According to the manufacturer, the wax is suitable for oak, pine, and any stripped or dried-out woods; our tests on dark walnut and light oak produced excellent results. *Beeswax Polish Paste, $5.60 postpaid. Available from Liberon Waxes, Inc., P.O. Box 1750, Dept. W, Mendocino, CA 95460.*

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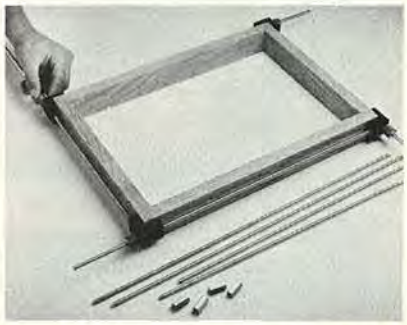


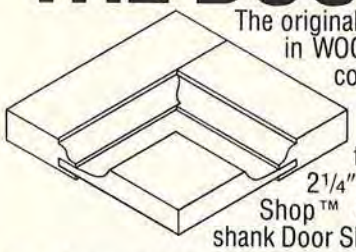
Fumble-free frame clamping

One of the biggest problems with picture-frame clamps is that it takes *forever* to adjust them. This rig has the solution: brass thumb nuts that slide freely along the threaded rods until you lock them against the corner blocks. An extension set (with four threaded rods and four coupling nuts) is available. *Picture Frame Clamp (catalog no. 47F01.01), $19.50 postpaid. We ordered ours from Garrett Wade Co., 161 Avenue of the Americas, Dept. W, New York, NY 10013. In Canada, send $21.75 (Canadian) to Lee Valley Tools Ltd., Dept. W, 2680 Queensview Drive, Ottawa, ON K2B 8H6, Canada.*

Avoid pegboard fallout

Here's a real temper-saver: a rubber grommet that keeps pegboard hooks from popping out when you grab a tool. They fit ⅛" hooks in ¼" perforated hardboard, but you can drill out the holes in ⅛" pegboard to accept them. An inserter tool is included with each bag of 10. *Peg-Lox, $1.25 per bag plus $1 postage per order. Steiner Specialty Company, P.O. Box 884, Dept. WD-10, Lancaster, OH 43130.*

THE DOOR SHOP™



The original Ogee **DOOR SHOP**™ as featured in WOOD MAGAZINE (MAY/JUNE 85) is complete with stile & rail, slot & panel raising bits for the 1/4" chuck router. Bits are carbide tipped & BB & will make 3/4" thru 2 1/4" thick raised panel doors. Door Shop™ & Manual $89.50 ppd. The 1/2" shank Door Shop™ now available.

The 35 page **DOOR SHOP™ MANUAL** is clearly written and beautifully illustrated with over 156 detailed drawings covering the complete process of door building. Each section covers proper methods and exact set ups for the router, including how to recognize and correct for errors. There are sections covering Design, Lumber selection, Measuring, Panel Raising, curved & straight Rail and Stile cutting & fitting, Guides, Clamping, Gluing and Finishing. This is the most comprehensive manual out today. When purchasing the Door Shop™ manual for $5.00 you also receive Zac's 32 page Router bit and Shaper cutter catalog free. $5.00 rebated with purchase of our Door Shop™ or Panel Raiser™ bits.

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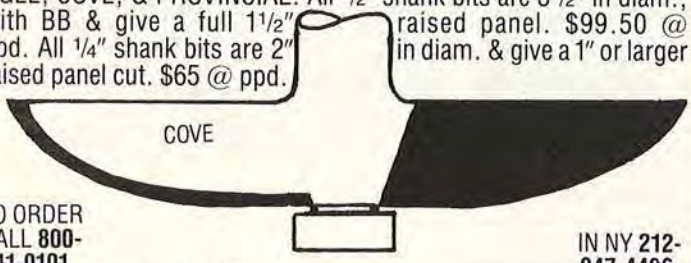

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GALLERY-QUALITY
PLANT PEDESTALS

All too often, greenery and other special display items go unnoticed for want of a place to show them off. You can change all that with these impressive, easy-to-build pedestals.

While they're really nothing more than basic boxes built with the simplest of all joinery techniques—butt joints—these pastel-colored pedestals will earn their keep in many a contemporary decor. We used 3/4" particleboard to frame up the cubes, all of which measure 8" square and range in height from 8" up to 36" (3/4" plywood would also work fine). Then, we covered the sides, front and back, and finally the top of each with Solicore®, a new solid-color surfacing material from Wilsonart. (Several other companies have this same product under other trade names.) The chief advantage of using a product with color all the way through is that with it you can minimize the visual impact of the seam lines.

A word to the wise when working with these new solid-color materials: Handle them with extreme care, as they are much more brittle than plastic laminate. And be sure you work them with carbide-tipped cutters when cutting on your table saw and trimming with your router.

Design: James R. Downing Photograph: Perry Struse

SLEEK AND SIMPLE

END TABLE CUBE

With today's generation of designer plastic laminates, even the simplest of designs can become a feast for the eyes. The muted geometric pattern laminate used here speaks softly but distinctively of your good taste.

One of the most intriguing things about cubes is that they're so versatile. Here we built ourselves an 18"-square plywood cube that stands 18" tall. Then we covered it with Formica-brand Burgundy Maxi Graph plastic laminate. But we could have just as easily altered the dimensions of the cube and made it into a coffee table, nightstand or even a sofa table. And by adding doors and/or drawers, we could have built additional function into the unit.

When applying any of the new patterned laminates, you need to pay careful attention to alignment of the pattern. Otherwise, when you trim off the excess laminate, the pattern may run unevenly along the edges of the item you're building. A few extra minutes spent aligning will solve this problem. You also need to take special pains to square up the corners of the project when assembling the carcass. (For more information about what's available in plastic laminates, please turn to the article on page 76.)

Design: James R. Downing Photograph: Perry Struse

Don't Miss These WOODWORKING WORLD SHOWS

VANCOUVER SHOW
Hyatt Regency Vancouver
Vancouver, British Columbia
Friday, March 14, 5pm-9pm
Saturday, March 15, 10am-6pm
Sunday, March 16, 10am-5pm

NEW ENGLAND SHOW
Springfield Civic Center
Springfield, Massachusetts
Friday, April 11, 5pm-9pm
Saturday, April 12, 10am-6pm
Sunday, April 13, 10am-5pm

KANSAS CITY SHOW
Kansas City Market Center at Executive Park
Kansas City, Missouri
Friday, May 2, 5pm-9pm
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WOODWORKING VIDEOS

The Next Best Thing to Being There?

Superman, Darth Vader, and old movie classics have a new foe competing for home video stardom—woodworking instruction. Here's a report from *WOOD* Magazine's How-To Editor Marlen Kemmet, who previewed a score of videos for us in recent weeks.

The video boom has arrived on the home woodworking scene in a *big* way. Two years ago, you would have been lucky to find one evening's worth of instructional woodworking video material. Today, though, you could take a week off work, end up blurry-eyed, and still have a few videos left to watch.

For years, the home woodworker has relied heavily on books and magazines for help with techniques. But with the advent of videotapes, hobbyists can now add an important new medium to their collection of reference materials.

Expert woodworkers are sharing their secrets for all to see in an expanding variety of quality video releases. Techniques range from carving to sharpening and deck-building to bowl-turning in videos that usually last ½ to 2 hours.

Videos aren't cheap. Almost all fall into the $40 to $70 range. Fortunately for the cost-conscious woodworker, a few sources have adopted a mail-order rental policy.

You don't have your own videocassette recorder (VCR)? No problem! Video shops that rent both movie videos and VCRs have sprung up on many a street corner. Hooking up one of them to your television set won't take long, either. Usually, you simply fasten a wire or two to the back of the set.

Beware, though: Watching a video can be like going to a new movie you haven't heard much

about. Sometimes you really enjoy it, and sometimes you don't. Whether you buy a video or rent one, make sure you get your money's worth by learning as much as you can in advance.

WHAT TO LOOK FOR IN A WOODWORKING VIDEO

1 Level of instruction. Most videos are geared for beginning to intermediate woodworkers. Shopsmith's "Making Bowls," for instance, is aimed at the beginner, while Taunton Press' "Bowl Turning with Del Stubbs" focuses on advanced techniques.

2 Authority of the instructor. Is the instructor a professional woodworker? Anything less, and you're probably wasting your time. All the videos we viewed had top-notch woodworkers doing the teaching.

3 The approach: No-nonsense or entertaining. James Krenov and his students from the College of the Redwoods take a no-nonsense approach to building fine hand planes. Roy Underhill from the Woodwright's Shop is as entertaining as he is educational when he talks about and demonstrates the use of great-granddad's tools. Decide what style suits you best.

4 Return policy. What happens if the videotape won't work or if you don't like the subject matter? You can return defective videos for a refund or new tape. But if the content fails to meet your expectations, most suppliers will charge you a rental fee, or will refund only part of your deposit.

5 VHS vs. BETA. Videos and players come in two basic types, *VHS* and *Beta*. Like eight-track tapes and cassettes, one won't work in a machine built for the other. Most rental shops carry both, but check to make sure before ordering or renting a videotape or player.

VIDEO INFORMATION GUIDE

Interested? Then use the listing below to obtain specific information about buying or renting a woodworking video.

Fine Tool Shops Inc., P.O. Box 1262, 20 Backus Ave., Danbury, CT 06810, 800-243-1037. If you're wondering how to choose the proper hand plane or how to adjust and tune it for perfect shavings, check out "How To Work With Hand Planes: The Bench Plane." The Fine Tool Shops do not have a rental policy per se, but if you are not satisfied and return a video within 30 days, you pay a $15 rental fee and are credited the difference. Four different videos are priced at $39.95 each.

Georgetowne, Inc. Video Productions, P.O. Box 625, Bethel Park, PA 15102, 412-854-1887. The three videos we reviewed, titled "World Championship Video Series," show award-winning decoy carver Pat Godin carving and painting a

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- The easy way to cut a perfect mortise with hand tools!

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WOODWORKING VIDEOS

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canvasback decoy. The three videos focus on forming the feather groups, creating the feathers, and how to paint the decoy. Videos No. 1 and 3 are $59.95, and video No. 2 is $39.95, or order the set for $149.95. No rental policy.

Mahogany Masterpieces, RFD 1, Wing Rd., Suncook, NH 03275. Four videos on Japanese master toolmakers. Prices range from $30 to $50. The videos rent for one week at $20–$25, plus a $25 deposit. (No videos were available for previewing.)

National Carvers Museum, Woodcarver Road, Monument, CO 80132. 303-481-2656. "Carve the Cowboy Head" with Claude Bolton shows how to carve both a cowboy's head and a bust for mounting. Twelve videos on carving also include "Bird in Flight" and "Fantasy Faces." Purchase price: $39.95 each; $20 rental fee for two weeks.

Osmose Great Plans Videos include "Great Decks," "Great Fences," and "Great Gazebos." The "Great Decks" video gives step-by-step instructions on building a deck. These videos, which sell for just $15.95 each, are available from dealers with the Osmose point-of-purchase display in their stores. Or call 800-522-9663.

Punkin Hollow Video Library consists of a seven-videotape woodworking series. The "Mortise and Tenon/Dadoes" video represents a complete guide for anyone interested in cutting one of the strongest joints, the mortise and tenon, completely by hand. You can buy (at $59.95 to $69.95 each) or rent them from The Woodworker's Supply of New Mexico.

Shopsmith, Inc., 6640 Poe Ave., Dayton, OH 45414-2591. 800-543-7586. Their three videos

include "Making Bowls," which turned out (if you'll excuse the pun) to be a good video for the beginning turner. The video offers easy-to-understand instructions on preparing stock and use of the roundnose in the scraping process. Prices run from $29.95 to $49.95, with no rental policy.

Taunton Press, P.O. Box 355, Newtown, CT 06470. 800-243-7252. Taunton Press produces videos for the advanced woodworker. Four of their five programs run 110 minutes or longer, and five more videos are in the making. Their present tapes include "Dovetail a Drawer," "Wood Finishing," and "Radial Arm Saw Joinery." Del Stubbs shows how to cut (not scrape) paper-thin bowls in his two hour video, "Bowl Turning." The videos are priced from $49.95 to $59.95, with no rental policy.

With The Grain (WTG) Videos, Box 1329, Mendocino, CA 95460. 707-937-0660. "Wooden Planes and Cabinet Scrapers" comes from California's College of the Redwoods, directed by master craftsman James Krenov. The video, along with plan drawings, explains how to build and use a wooden plane and how to use a cabinet scraper. WTG Videos also carries 13 programs from Roy Underhill's popular PBS series "The Woodwright's Shop" on Early American woodcraft, available in a four-volume video set. The videos sell for $59.95 each, and rent for $20 for 30 days.

Woodworker's Supply of New Mexico, 5604 Alameda N.E., Albuquerque, NM 87113. 505-821-0500. A selection of 13 videos includes a seven-video Punkin Hollow Series, the five videos by Taunton Press, and R. J. De Cristoforo's "Table Saw Expertise." The latter explains in layman's terms how to miter, taper, kerf, and build several table-saw jigs. Videos range from $39.95 to $69.95, with a rental policy of $19.90 per video for 30 days.

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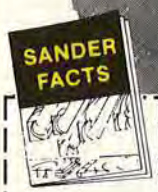

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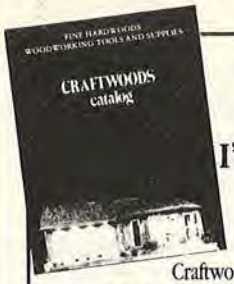

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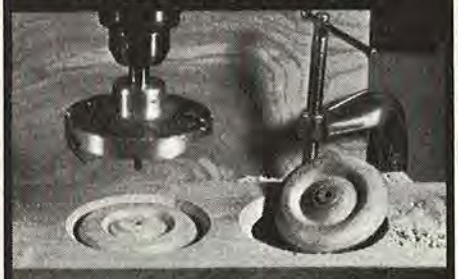

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The Bulletin Board

FACTS, FACES & FABLES OF INTEREST TO HOME WOODWORKERS

ROY UNDERHILL: MASTER CRAFTSMAN OF THE OLD HAND WAYS

He's the author of *WOOD* Magazine's "Old Hand Ways" column, several books, and star of the Public Broadcasting System's national television series, *The Woodwright's Shop.* At age 35, Roy Underhill may already have spent more time working wood with traditional hand methods than many a woodwright did back in the 1700s.

A hands-on historian of technology, Roy daily displays his multitude of skills as Master Housewright at Colonial Williamsburg in Virginia. An admiring public continually marvels at how things were done centuries ago.

Roy probably came by his skills naturally. In 1597, his ancestor, a joiner named William Underhill, sold William Shakespeare a house at Stratford on Avon, England. Another forebear, a wheelwright, was one of the first settlers on the Virginia Colony's York River in 1690.

Roy inherited an inclination toward the old hand ways, but he learned their application during graduate study at Duke University. From there, Roy applied his skills to museum restoration projects, until he was hired for a rebuilding program that was under way at Colonial Williamsburg.

Roy Underhill and daughter Rachel

To Roy, the public's growing interest in handcraftsmanship is a response to our complex, technological society. "We're so 'high tech' we need more 'high touch,' and traditional woodworking provides that," says Roy. "The process is simple, using materials organic and infinitely different, and it produces a tangible product that comes from our hands."

Communicating that handcrafting process has become Roy's priority. Soon, he'll be sharing his knowledge of those techniques in a new television series, but from behind the camera this time rather than in front of it. He's directing several stories about the trades of Colonial Williamsburg.

When Roy goes home to his wife, Jane, and daughters Rachel, 7, and Eleanor, 4, you might expect him to relax by building a Windsor chair with hand tools. Instead, he leaves the old hand ways in the past. Says Roy, "When I get home I don't want to see anything old. I want to sit in front of my computer."

START A WOOD COLLECTION—BY MAIL

Members of the International Wood Collectors Society collect wood—from all over the world and often in staggering amounts. One member, Alan B. Curtis, of Eugene, Oreg., has collected enough samples collected that he sells spares.

Alan, a professional forester and botanist, set out years ago to personally find, identify, and collect samples of all 680 native American woods. In this ongoing process, he has also managed to gather an assortment from far-off lands. Now, for lack of storage, he has to part with some.

For as little as 35 cents you can buy a ½×3×6″ piece of incense cedar or sassafrass. For a sale list of Alan's samples and their origins, send a stamped, self-addressed, business-sized envelope to Alan B. Curtis, 2370 Douglas Dr. #1132, Eugene, OR 97405.

Grant Goltz's great gray owl was an impressive entry in the 1985 World Carving Championship Competition.

CHAMPION CARVERS CONVERGE

For the past 15 years, Ocean City, Md., has been the place for carvers to be at the end of April. There, in Convention Hall, top wildfowl carvers from all over the U.S. and many foreign countries converge for the Ward Foundation's World Championship Wildfowl Carving Competition.

In 1985, 217 professionals, 219 amateurs, and 361 novice carvers competed for nearly $90,000 in prize money and purchase awards, ribbons, and recognition. More than 20,000 people paid to view the entries in the 3-day event, and participate in the auction of world-class decorative decoys.

Competition is tough. Minor anatomical flaws detected by experienced judges can drop months of work from the top of the class. The great gray owl with prey at left failed to capture a world-class ribbon because the mouse in its beak appeared too stiff.

This year's competition is April 25–27. For more information, write: Knute Bartrag, 707 Eastern Shore Dr., Salisbury, MD 21801.

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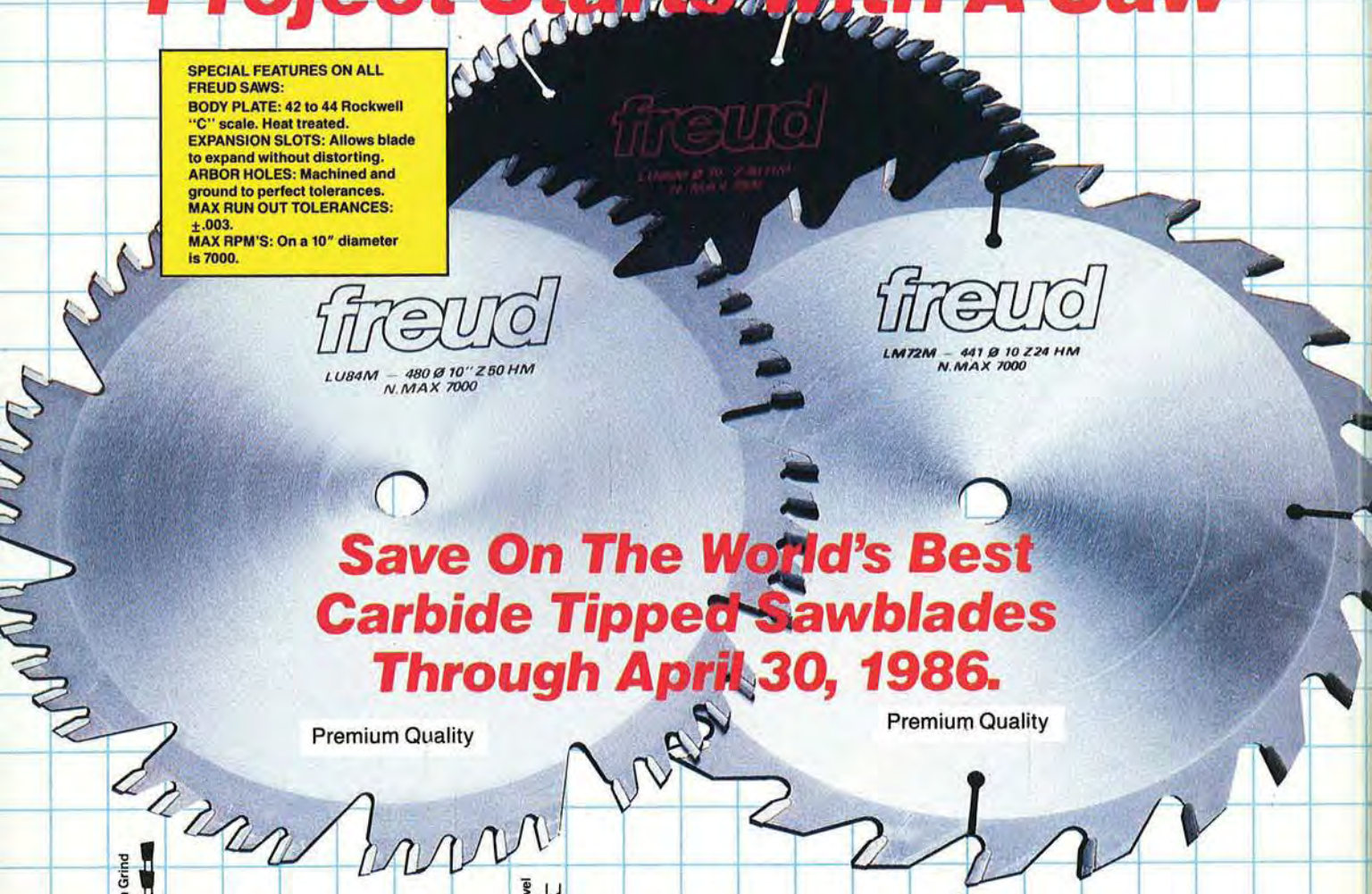

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Hook angle 20°
Carbide Used: C2

This blade is designed for fast ripping along the grain of the wood. Excellent finish is obtained when ripping. The advantage of using a C2 grade carbide is to allow us to use an aggressive 20° hook for fast ripping and yet go through occasional knots without fracturing the tips.

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